GPI*Atlantic*

EDUCATING FOR GROSS NATIONAL HAPPINESS IN BHUTAN

DEVELOPING CURRICULA AND INDICATORS FOR AN EDUCATED POPULACE A LITERATURE REVIEW

DOCUMENT 1 (OF 2)
PARTS I – III (OF VI)

For
The Royal Government of Bhutan

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The central issue of our times is the relationship between humans and their knowledge.

Jerzy Wojciechowski

It is ideas that determine the direction in which civilizations go. If you don't get your ideas right, it doesn't matter what policies you try to put in place. The policies will backfire, because the ideas that dominate will not be the right ideas. You have to begin with the ideas -- then you can simply go ahead and put them into effect.

John Ralston Saul

We envision a world where everyone has the opportunity to benefit from education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation.

UNESCO: Decade of Education for Sustainable Development

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PREFACE

EDUCATING FOR GROSS NATIONAL HAPPINESS IN BHUTAN

Background

> The concept of Gross National Happiness (GNH) in Bhutan is based on the premise that true development of human society takes place when material and spiritual development occur side by side to complement and reinforce each other.
> — Lyonpo Jigmi Y Thinley,
> Prime Minister of Bhutan

Together, 'Four Pillars' constitute conditions for "Gross National Happiness":

1. Cultural Promotion
2. Good Governance
3. Equitable Economic Development, and
4. Environmental Protection.

Bhutan today stands at a remarkable crossroads in its history, where decisions made today may well influence the future of the country for generations to come. On the one hand, the country's guiding philosophy since 1972 has been the principle of 'Gross National Happiness' (GNH), which seeks to integrate sustainable and equitable economic development with environmental conservation, good governance, and preservation and promotion of the country's ancient culture and profound traditions. On the other hand, rapid modernization and the lure of consumerism may accentuate materialist tendencies that could undermine the environmental, social, and cultural pillars of GNH.

For GNH to survive and flourish as Bhutan's guiding development philosophy in generations to come, it is absolutely essential that its educational system be fully transformed to embody and reflect GNH values and principles. Given the onslaught of consumerist and materialist messages with which our children and youth are today bombarded as never before, GNH values and principles must be rooted in their consciousness if, as citizens and leaders of the future, today's youth are to guide this country wisely to balance economic development with environmental conservation, cultural dynamism, and good governance.

The long-term goal, quite simply, is to ensure that Bhutanese youth grow up to care deeply about nature and about others, to think and see reality clearly and rationally, and

to act wisely, and that they can be a beacon and model of wellbeing, sanity, and balanced development in a troubled world facing extraordinary environmental and social challenges.

It is no exaggeration to say that the initiative on which Bhutan is embarking is unprecedented. While individual schools in different parts of the world have attempted to transform their curricula along holistic lines, and to incorporate deep critical thinking, indigenous knowledge, local wisdom, contemplative education, sustainability education and eco-literacy into their teaching, no country has ever attempted to do so on a national scale.

If successful in Bhutan, this unique development philosophy, which seeks to join social, economic, and environmental objectives, could become a powerful model for other countries, particularly in the rest of South Asia and other parts of the developing world. It could also have important lessons for industrialized countries that increasingly recognise the necessity for economic advances to be more effectively integrated with environmental conservation and social wellbeing.

In order to make GNH a living reality in Bhutan, the Prime Minister, Lyonchen Jigmi Thinley, has identified two particular actions that he believes are essential in order to guide and shape the country's development far into the future. Both are far-reaching, systemic, and designed to ensure that GNH becomes embedded in the structure of the country's institutions and the consciousness of its people.

- The first action is to bring GNH principles, approaches, and examples into the country's educational system and curricula at every level — from kindergarten and first grade through high school graduation and into tertiary education.

- The second action is to create an inspiring living model of GNH in practice, located in the country's spiritual heartland of Bumthang in central Bhutan—a centre where sustainability practices are demonstrated at every level and where civil servants, teachers, students, and ordinary Bhutanese can come to take long and short courses that renew their commitment to environmental protection, cultural promotion, sustainable economic practices, and responsible and accountable leadership.

A GNH Curriculum

This literature review, which provides background information on curriculum elements that reflect GNH principles and values, focuses on the first of these two objectives— which involves not only construction of dedicated GNH educational curricula at all levels, but permeating all subjects (like math, science, language studies, and more) with a GNH view and approach.

What does this mean in practice? First, sustainability principles, values, factual knowledge, and behaviour would not only be taught in dedicated courses on environmental science, protection, and conservation, but they would also serve as examples in mathematics exercises, grammar texts, science experiments and more. Noted educators like David Orr have critiqued conventional science texts for neglecting and underplaying human dependence on the natural world, and in some cases implicitly promoting environmentally destructive behaviours by implying the potential dominance of man and technology over nature. A GNH curriculum would correct that present imbalance by focussing more on the interdependent nature of reality, including human interaction with natural forces.

Just as there is growing recognition of the importance of sustainability education if human behaviours are to become more environmentally responsible, a GNH curriculum would also promote and teach respect for Indigenous human cultures, languages, and knowledge. Already a few inspired Bhutanese educators are taking students into the country's old-growth forests to show and teach youth about the medicinal value and uses of local herbs and plants—thus not only teaching respect for the land and its environment, but also transmitting profound and valuable Indigenous knowledge passed on for generations, and in danger of being lost if not incorporated into formal educational curricula.

While the importance of these kinds of educational principles and approaches is increasingly widely acknowledged, there is no sovereign nation in the world aside from Bhutan that has officially adopted a holistic approach to development that integrates economic, social, cultural, and environmental objectives as its core philosophy and the foundation of its policy planning. Bhutan is therefore uniquely placed globally to implement an educational curriculum based on these principles at a systemic level that permeates every educational structure and curriculum in the country. In other countries, there are particular teachers and some alternative schools that have adopted the approaches described here. But Bhutan's systemic implementation of these principles at the national level could offer much needed hope to a world that has become increasingly at odds with the natural world and that has seen the rapid loss of both cultural and environmental diversity (to its own peril).

Bhutanese leaders and educators, including the country's Education Minister himself, have emphasized that genuine GNH curricula would go beyond mere conceptual and intellectual learning but attempt more effectively to integrate heart, mind, spirit, and behaviour (or action). In other words, such curricula would incorporate learning that draws not only on reasoning alone but also on experiential, artistic and feeling faculties, and that attempts to translate knowledge into action. For example, some Bhutanese educators and policy makers suggested that GNH curricula might also include community service and voluntary action that nurtures compassion and care for others.

It must be emphasized that none of the intended educational reforms in Bhutan would compromise academic rigour. On the contrary, reasoning and critical thinking would be elevated as a top priority in genuine GNH curricula. To give just one example, a key outcome of GNH curricula would be the training of students who could effectively measure genuinely integrated progress statistically—an ability that requires a high degree of mathematical, statistical, and scientific rigour and complex analysis.

One of the first steps in designing and implementing national GNH curricula is to identify what is important to know in fields like ecological literacy, sustainability education, contemplative education, Indigenous knowledge, holistic and experiential learning, and integration of community service in school curricula. This literature review is intended to inform such goals, and thus, to contribute to developing a new GNH curriculum in Bhutan.

An educated populace

The literature review has been adapted from research previously undertaken by GPI Atlantic to develop indicators of an educated populace in Canada. As such, although much of the information provided relates specifically to Canada, much of the information could also inform an educated populace assessment in Bhutan. Therefore, it is hoped that, in addition to providing information on curricula, the literature review will also be of interest to Bhutanese educators who might be interested in assessing educated populace levels in Bhutan.

Education is one of the most challenging areas for which to develop measures of progress and success, because of the inadequacy of most existing indicators, and because much conceptual and definitional groundwork must first be laid before appropriate indicators can be developed. One key goal of this literature review, therefore, is to go well beyond conventional quantitative indicators (like graduates per capita or high-school drop out rates), which tell us almost nothing about educational quality and very little about real educational attainment, let alone whether Bhutan, as a society, is becoming wiser, more knowledgeable, or more aligned with GNH principles and values.

With few exceptions, like literacy assessments, most conventional Western education indicators provide very little information about *outcomes,* which must be a key concern of any GNH-based educational system. This literature review therefore reports on promising new research that explores the feasibility of developing a framework and indicators that can potentially assess *qualitative* improvements in knowledge, educational attainment, and the transmission of GNH-related values like care and respect for nature and for others, as well as the actual measurability of improvements in societal knowledge and in behaviour that is reflective of GNH principles.

In this literature review we are defining "literacy" very broadly to include the knowledge and skills required to foster Gross National Happiness (GNH). Thus, in relation to the

Bhutanese populace as well as society in general, we are asking: what do we need to learn and to know in order to live healthy lives; have decent jobs; participate actively in our communities, in cultural activities, and as citizens; and understand the world in which we live? We are also concerned to explore whether learning outcomes of an educated populace are effectively translated into desired social outcomes that reflect GNH values and principles.

In order to answer practical questions like these, and for this lengthy literature review to be a useful resource in the years ahead for creating a GNH-based educational system, we clearly need to define what we mean by "GNH values and principles" in relation to education. For the purposes of this literature review we have adopted the following broad definition, while acknowledging that this is a working definition that will be refined in consort with the Bhutanese in the future:

GNH values and principles, as reflected in a GNH-based educational system, are understood to include:
- a deep and genuine understanding of and care and respect for nature, for others, and for Bhutan's profound and ancient culture;
- the critical capacity to understand and see reality clearly and to see through deception; and
- the ability to manifest these qualities in action and behaviour in order to benefit Bhutan and the world, to develop the economy in a sustainable and socially responsible way, and to be "good citizens" who can act effectively to improve wellbeing.

This is not intended as a comprehensive or authoritative definition by any means. Nor is it the function of the compilers of this literature review to pronounce on such an important matter. For the purposes of this literature review, however, it is necessary to have some approximate reference points like the definition above in order to identify educational approaches that appear to be consonant with GNH values and principles, and in order to consider potential indicators and measures of success for a GNH-based educational system.

Fundamental to these GNH principles and values is the understanding that genuine progress must be based on the sustainability and wellbeing of human society and the natural environment. In this literature review we use a sustainability lens, which is a cross-cutting theme of GNH, to guide our approach towards developing a new curriculum designed to produce and assess an educated populace. Wellbeing in GNH is explicitly defined to include the welfare of future generations of Bhutanese as well as that of the present generation, and to be correlated with certain key conditions— physical and mental health, decent living standards, a healthy physical environment, strong and safe communities, vibrant culture, good government, and the ability to balance the often competing demands of paid and unpaid work with ample free time. The inter-generational dimension of wellbeing is intrinsically linked to current wellbeing in GNH values by the

recognition that present wellbeing is enhanced if Bhutanese have confidence in their children's future, and it is diminished if they feel anxious that their children's health, living standards, environment, culture, and communities are imperilled. From that perspective, an educated populace is one that has the requisite knowledge to strengthen these conditions of wellbeing, and thereby to enhance both its own opportunities for wellbeing and those of its children.

From the perspective of GNH, education is seen as a vital contribution to, and investment in, both the quality of life and wellbeing of the populace and the health of the entire natural environment upon which that populace depends for its survival and prosperity. Creating and nurturing healthy and sustainable societies—social, economic, cultural, and physical environments that enhance wellbeing—requires knowledge and wisdom. The fundamental goal of the GNH-based education, therefore, is to develop an educated populace that is becoming wiser and more knowledgeable.

The material presented here explores educational issues that could potentially contribute to societal improvements in educational attainment and societal knowledge in Bhutan. Because education is arguably a key to societal transformation and change in many conditions of wellbeing, an educated populace is crucial in linking all the pillars of the GNH.

For comparison purposes, this literature review reviews aspects of education in the West, with a focus on Canadian educational indicators, as an example of what is conventionally practiced in the West. Although some of the examples of educational practices and indicators may not be specifically relevant to Bhutan, they may provide examples of what to avoid in the future. For example, the literature review demonstrates that current Western indicators of educational attainment—which reflect Western values and educational curricula—reflect societal priorities that do not necessarily or always further wellbeing or GNH. In the past, conventional Western education indicators and policies have been very narrowly defined and provide no real insight on how educated and knowledgeable the Western, and specifically the Canadian, populace is or whether it is becoming more so, nor whether its present knowledge matches current social needs (e.g., sustainability). Systems of educational evaluation increasingly emphasize accountability for "returns on investment" to "stakeholders" rather than broader contributions of knowledge and learning to society. Similarly, most of the rhetoric about education for the "new economy" focuses rather narrowly on the need to enhance human economic productivity, rather than on enhancing wellbeing or providing broader societal benefit.

In addition, formal education is increasingly seen as being necessary to prepare students for the new workforce, with the idea that high grades in school, participation in postsecondary education, and the attainment of a lucrative career will improve individual wellbeing and strengthen and grow the economy. The ultimate goal of this conventional paradigm is a materially comfortable lifestyle that presumably maximizes overall wellbeing. However, critics have noted that when the emphasis is on material gain, the

focus of education becomes narrowed and the central challenge of sustainability, which is linked to wellbeing, is not addressed.

Thus, with few exceptions, the conventional Western education indicators currently in use—whether focused on enrolment and graduation rates, or on standardized test results in a few fields—do not tell us much about the quality of education and whether the educational system is successful at creating an educated populace. For instance, they do not tell us whether students have learned to think and analyze for themselves, whether they have accumulated essential knowledge required to function in today's world (such as how to live sustainably and healthily), or whether their formal education has motivated them to contribute positively to society. These conventional indicators are also mainly confined to the formal education system and, for the most part, do not take into account the education that takes place in informal and nonformal education systems such as the home, workplace, and the media, where a great deal of learning takes place.

In the West, "educational attainment" is the main variable used most often in the social sciences to correlate societal outcomes with learning outcomes. The statistics show that high educational attainment, in contrast to low educational attainment, is positively correlated with higher income, better health, greater civic responsibility, and higher living standards. But high educational attainment learning outcomes are not positively correlated with desirable social outcomes in areas such as equity, ecological integrity, human impact on the environment, sensible time use, and reduced stress, to name a few areas. For example, there is evidence that more highly educated and wealthy people and societies consume more, and contribute more to ecological problems, than less educated people. Therefore, based on that fact alone, education indicators that are broader than those of "educational attainment" in the above sense are needed to reflect the important social outcomes of learning.

Western indicators of formal schooling reflect only one determinant of an educated populace. International organizations such as the United Nations[1] and the Organisation for Economic Co-operation and Development (OECD),[2] as well as Canadian organizations such as the new Canadian Council on Learning (CCL),[3] recognize that learning and education occur not only in formal schooling, but also through informal and non-traditional learning that takes place in settings including the home, community, and

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[1] United Nations Educational Scientific and Cultural Organization (UNESCO). *U.N. Decade of Education for Sustainable Development 2005-2014. International Implementation Scheme (Draft)*, Paris, UNESCO, 2005; accessed April 2005; available from http://portal.unesco.org/education/admin/ev.php?URL_ID=36026&URL_DO=DO_TOPIC&URL_SECTION=201&reload=1099410445.

[2] Organisation for Economic Co-operation and Development (OECD). *Lifelong Learning for All*, Paris: OECD, 1996.

[3] Cartwright, Fernando, Jerry Mussio, and Chris Boughton. *Developing the Composite Learning Index. A Framework*, Ottawa, Canadian Council on Learning (CCL), 2006; accessed February 2006; available from http://www.ccl-cca.ca/NR/rdonlyres/EC1499F7-2767-4D8E-AB17-B8DEC36C2FAD/0/CLI_Framework.pdf.

workplace, and through broadcast and print media and the Internet. As well, values and attitudes held by the public both influence knowledge and learning and reflect learning outcomes. Therefore, the suggestion is that GNH-based education consider that education needs to go well beyond that of the formal schooling system alone, and include consideration of informal learning and competencies in specific fields of knowledge that are required to increase wellbeing.

Therefore, a GNH view of educational objectives and of the desired societal outcomes of education that is broader than conventional, Western views of education is essential to developing an educated Bhutanese populace. An educated Bhutanese populace might be one in which both Bhutanese youth and adults are becoming more aware of contextual situations and systems, social and economic interconnections, current world events, the processes of the natural world, and the influence of current lifestyles on population health and the choices and quality of life of future generations. For example, effective societal education and learning outcomes should be reflected in desired social outcomes such as economic prosperity, equity, environmental stewardship, cultural promotion and preservation, good governance, and social tolerance. From this broad perspective, failure in those realms might be seen as failures in education and in learning processes.

In the following chapters we explore—among other key literacies—knowledge of the natural world, of science, and of ways of learning about, understanding, and living in the natural world that rely on and also go beyond the rational, scientific approach. Because GNH principles define wellbeing outcomes to include the wellbeing of future generations, one core theme and question of the following chapters is: are Bhutanese learning what they need to know in order to live sustainably and to ensure the wellbeing of future generations? We also ask: what do Bhutanese need to know in order to live healthy lives, to participate actively in their communities, and to be informed citizens, and how effective are present learning systems in transmitting this knowledge?

In order to answer such questions, we need to be able to examine lifelong learning levels of understanding and knowledge in the populace in areas such as ecology, Indigenous knowledge, science, health, citizenship, multiculturalism, the media, statistics, and the arts. In short, to determine how educated the Bhutanese (or any) populace actually is requires a far more profound and wide-reaching analysis than is possible through conventional education indicator assessments of school and university enrolment, graduation rates, and standardized test results. Because of the lack of data needed to assess educated populace levels in Canada, we have recommended that a new Canadian Knowledge Survey be developed to collect these data, which might also be of interest to Bhutanese leaders and educators.

Thus, the following review is especially concerned with measures of specific literacies that could be included in such a knowledge survey and applied to an educated populace assessment—which also could imply the types of curricula needed in schools. Most of the information provided in the chapters below is from Western sources, and although some

of it may not be specifically relevant to Bhutan, most of the information does have global implications. It is hoped that the information may be of interest to Bhutanese educators working to infuse GNH values and principles into the Bhutanese educational system.

Recently, important new international work is greatly expanding the definition, understanding, and context of education and learning, which will dramatically shift the way progress in education is viewed and the way educational policy is crafted. This literature review outlines some of these promising new directions that have particular significance for Bhutan.. For example, the United Nations Educational, Scientific and Cultural Organization (UNESCO) has been working with nations in its Decade of Education for Sustainable Development 2005-2014 program (DESD). This program represents the education needed, and the social and economic systems necessary, for sustainable development. This broader sociocultural approach represents the collective, holistic knowledge that society holds and acts upon in order to enhance societal wellbeing. Therefore, the DESD framework can be examined and used to inform the broader education—or learning—that is under development in Bhutan.

This literature review of what might be considered to be genuine educational attainment that is infused with GNH values and principles is certainly not a final product, and it does not produce a definitive curriculum for an education system in Bhutan. However, it is a step towards viewing wellbeing and sustainable development more comprehensively and accurately than do conventional Western educational systems. It is a work in progress designed to lay the groundwork for an economy and society that will genuinely reflect the social, spiritual, environmental, and human values of Bhutanese society.

INTRODUCTION

This literature review represents an initial phase of exploring potential curricula for and indicators of a Bhutanese "educated populace." Because education is key to societal transformation and change in many areas, education is crucial in linking all of the pillars of GNH and in bringing key issues onto the policy agenda. Considerable developmental work is required to design new education curricula that reflects GNH values and principles, as standard educational systems, for the most part, do not reflect these values in meaningful ways.

This review of education and other literature that could inform new GNH-based education curricula and an educated populace assessment covers a wide-range of disciplines. The exploration has led us far from the standard education field. Because a GNH-based education system aims to increase both current wellbeing and the sustainability in Bhutan, we began with some broad questions:

- What is an educated populace?
- What do we need to *know* in the twenty-first century to create a sustainable world for our children?
- What do we need to *know* to ensure wellbeing and a sustainable and good quality of life for all?
- What measures might indicate whether society is becoming more knowledgeable, educated, and wise?
- How do we assess the *quality* of education, and not just the *quantity* of graduates?

Thus, outcomes of an educated populace can be reflected in qualitative elements, such as happiness, quality of life, and wellbeing—as well as the quality of education, the quality of jobs, and the quality of environmental assets like forests, rivers, and lakes and the quality or supply of timber and water available.

GNH values and principles incorporate the view that genuine progress must reflect improvements in the health and wellbeing of human society and the natural environment. A cross-cutting theme is the sustainability of the wellbeing of society and the planet, and, in this literature review, a sustainability lens was used to guide the approach. Wellbeing is defined to include the welfare of future generations of Bhutanese, as well as that of the present generation, and to be correlated with certain key conditions—physical and mental health, decent living standards, a healthy physical environment, strong and safe communities, vibrant culture, good government, and the ability to balance the often competing demands of paid and unpaid work with ample free time.

From that perspective, an educated Bhutanese populace is one that has the requisite knowledge to strengthen these conditions of wellbeing, and thereby to enhance both its own opportunities for wellbeing and those of its children. Creating and nurturing healthy

and sustainable societies—based on healthy social, economic, cultural, and physical environments—requires knowledge and the wisdom to use this knowledge for the benefit of the common good. We have used this broad GNH lens to guide our research here.

The literature reviewed, as seen in Part I, Chapter 2, indicates that most Western education initiatives today are driven by the assumption that improvements in economic performance will lead to the enhanced wellbeing of society, and that a key role of education is therefore to prepare students for their role and function in the economy. The call from almost all sectors is to create a new "knowledge economy" or "information society" by upgrading the technical skills and proficiencies of the workforce to meet the new challenges of competition and technological innovations. Central to this is the need for education to prepare students to fit into this new workforce, with the marks of success being high grades in school, participation in postsecondary education, and the attainment of a lucrative career. Societally, high success rates in these areas are assumed to strengthen and grow the economy and enhance competitiveness. Individually, the goal is a materially comfortable lifestyle that minimizes inconvenience and, presumably, maximizes overall wellbeing.

These may be reasonable goals, but, with the emphasis on material gain, the focus of education becomes narrowed, and the central challenge of sustainability is not addressed. Preparing students for the job market and a secure livelihood is important, but it is only one element of what is needed for quality of life and wellbeing. GNH values define quality of life and wellbeing broadly to include physical and mental health, time balance, vital communities, a healthy environment, and good governance. From the GNH perspective, therefore, an effective education system is one that, as its outcome, enhances wellbeing in all these domains.

In the literature review that follows, we have included information on the conventional, Western formal education system, but—in order to broaden the scope to reflect the GNH perspective—we have also gone beyond the conventional education system to include nonformal and informal learning in the areas of lifelong and lifewide learning (e.g., at home, at work, at play). According to Coombs and Ahmed, nonformal learning refers to any organized, systematic, educational activity, which is carried on outside the formal system, and which does not lead to a formal diploma or degree, such as classes taken to enhance workplace skills.[4] Informal learning refers to the lifelong process by which every person acquires and accumulates knowledge, skills, attitudes and insights from daily experiences, such as from the example and the attitudes of family and friends; from travel, reading newspapers and books; or by listening to the radio or viewing films.[5]

In order to inform the design of an educated populace assessment, we developed a conceptual framework using a sustainability and systems framework, which is

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[4] Coombs, Philip H., and Manzoor Ahmed. *Attacking Rural Poverty: How Nonformal Education Can Help*, Baltimore: John Hopkins University Press, 1974.
[5] Ibid.

appropriate to GNH values and principles. Within that view, the education or learning framework is seen to be inclusive, encompassing all aspects of lifelong learning from early childhood education, through K–12 primary and secondary school, through higher education, adult education, and learning for life. The framework also includes lifewide learning, from the formal education system referenced above, to work-related and personal-interest nonformal learning, to tacit and informal learning.

Various existing education curiculum frameworks, each with its own rationale, are presented in this literature review. However, the literature review did not find these existing frameworks to be broad enough, in and of themselves, for the far-reaching purpose of GNH goals. We did, however, find parts of these frameworks, and combinations of them, to be very useful in moving towards a more comprehensive framework that may eventually be able to assess the degree to which Bhutanese are becoming wiser and more knowledgeable in general.

The framework adopted for an educated populace in general, which reflects GNH values, is discussed in Part I, Chapter 1 of the literature review, and is illustrated by two charts presented in the chapter. Here we describe the basic framework and other frameworks that have influenced our thinking. The basic framework is circular, and the separate elements are nested within each other, rather than formed by vertical or horizontal relationships. This indicates that the learning processes and outcomes have a multi-causal and interdependent relationship, rather than a linear relationship based on cause and effect, or input-output models.

Basically, the wisdom and values of the populace, which represent both an outcome and a determinant of an educated populace, are centred within the larger, overarching context of ecological integrity and sustainability. Within these two reference points are social outcomes, learning outcomes, and contextual elements of education. The latter includes elements such as the physical and mental environments within which learning takes place, structural elements such as financial investment in learning and education, and access to education and opportunities for learning. In conventional education frameworks, these contextual elements are represented by input, learning process, and output indicators.

The aim is to ultimately develop a holistic curriculum that will ensure society is teaching and learning what it actually needs to know to enhance social wellbeing and to generate and use knowledge for the public good. This effective creation and use of knowledge for societal benefit requires both basic literacy and knowledge of multiple literacies in relevant areas such as ecology, civics, and multiculturalism.

A holistic curriculum also involves the need to ensure that education and learning are influenced by GNH values, which in turn is crucial to enhance sustainability. Definitions and measures of wisdom and values are explored in Part II of this review. For example, if knowledge is generated and transmitted in such a way as to promote short-term personal

gain, comfort, and advantage at the expense of future generations and long-term societal needs, then the educational system is undermining sustainability. Thus, an educated populace framework requires a broad view of wisdom, a definition of what it means for a society to be wise, and the ability to track changes in the values and wisdom of the populace over time.

In Part I, Chapter 2 of this review, we examine the conventional Western education indicator systems currently in use and indicate how the GNH approach will necessarily differ from the conventional approach to education. In Chapter 3 we explore the question of how we can define an "educated populace," and describe the radical changes in approach and method that are currently taking place within the field of education and lifelong learning in the West. These changes involve three major shifts in thinking that are driving new developments: a shift from a focus on education as schooling to a focus on learning and lifelong learning; a shift from a reductionist view to a holistic view; and a shift from basic literacy alone to new literacies emphasizing what we need to know to live sustainably and to create a sustainable society.

Part II of this review examines the outcomes and measures of wisdom and values of an educated populace. Part III discusses the first part of the context area—the learning environments within which education takes place. In part, this section specifically looks at the contexts of lifelong and lifewide learning including nonformal and informal learning; the influences of commercialization on education in the West; participation in cultural activities as a reflection of informal learning environments; the influence of mental health on the learning environment; and the influence on learning of the mental environment, which is defined as knowledge elements, such as those created by the mass media that reflect knowledge in the public commons.

Part IV of the review, which is located in Document 2, includes learning outcomes in multiple literacies that represent what an educated populace needs to know to create healthy and sustainable societies within a healthy ecosystem. The literature review does briefly look at social outcomes and contextual elements, as noted. However, it focuses mainly on learning outcomes, which are defined as a multiple literacies that encompass what we need to know to increase societal wellbeing and GNH. These literacies include knowledge in the following areas: basic adult literacy, ecology, Indigenous knowledge, science, health, food and nutrition, civics, multiculturalism, media, statistics, and art.

Each of these areas has its own literature, concepts, views, practitioner agreements and disagreements, frameworks, and evaluation and assessment methods. The literacies clearly overlap, and information highlighted in one area may also be found throughout this review in other areas as well. In addition, we discuss areas such as Western primary, secondary, and higher education in several sections, and materials on the relationship between education and the economy is distributed throughout this review.

In Part V, we look at the second section of learning contexts, which influence the outcome of an educated populace in the West. As noted, information the Western educational system is included to provide a contrast to a system built on GNH values and principles, and as a caveat to consider in the design of the new GNH system. The learning contexts include structural elements within the formal education system, such as early childhood education, student achievements and satisfaction, and access and barriers to education. In addition, higher education, the role of the university, and research and development within the university are discussed. Most discussion of curriculum elements within the formal education system is included within the sections concerned with the specific literacies. Finally, Part VI addresses selected social outcomes of learning, as further examples of an educated populace.

The following is an overview of some of the general findings of this literature review. More specific and detailed information can be found in the full review and in the Appendices.

What is an educated populace?

To develop a curriculum based on GNH values and principles, which will advance social progress in general and in learning and education in particular, it is necessary to continue to identify and specifically define what the Bhutanese populace needs to *know* in order to create a sustainable society that promotes the wellbeing of all. For example, questions to ask might include: What is an educated populace? How can we recognize whether it is becoming more educated over time? What is quality education? Are we becoming more knowledgeable and wise as a society? Might such knowledge and wisdom be gauged, at least in part, by the degree to which a society effectively cares for the world and for communities, rather than simply reflected in increased technical capacity? And what are indications of these different values and trends?

Many educators today are seriously rethinking the schooling process. They are calling for different models of learning, which engage students in learning that is relevant to them and which also engage them in the larger community. The concepts of "learning for life" and lifelong learning have become prominent in most educational goal statements at every level.

In 2005, Douglas Stewart, emeritus professor of education at the University of Regina, compared the mission and goal statements of education departments in Canadian provinces and territories to determine their views on the purposes of public schooling. Stewart found that there are no or few references in these mission/ goal statements that refer to "education," "national identity," or "the care and concern for the natural environment." His primary concern was that the goals stated by provincial education departments are not prioritized or used to develop a coherent conception of education. Nor is there any reference to the transformative capacity of education, which Stewart sees as the heart of education:

> I am drawing upon a conception of "education" as transformative and empowering. It is one that implies the development and enlargement of human consciousness or awareness of the world, of "seeing" or looking at the world with new and enriched perspectives that transcend the local and particular, and that enable individuals to achieve a greater meaning and sense of who they are and how they relate to the world.[6]

Becoming more conscious and aware, Stewart notes, involves training the mind, which includes the cognitive aspects of social, emotional, and moral development.

Rethinking schooling involves asking very basic questions such as "what is an educated person," and "what is a learning society?" In other words, what is needed both for children to flourish and develop wellbeing in their own lives, and what is needed for society to flourish, to foster wellbeing in its citizens, and to leave a healthy, sustainable world for future generations?

A forum held by the Canadian Education Association in June 2004 initiated a dialogue between federal government departments and non-governmental organizations (NGOs) on the purposes and goals of education in Canada. The general consensus of the forum participants was that the main characteristic of an educated person is higher cognitive skills that result in "active citizenship, respect, social and environmental responsibility, anti-racism, courage, creativity, and critical thinking."[7]

One of the most inclusive statements concerning the goals of education comes from the UN:

> The goal of education is to make people wiser, more knowledgeable, better informed, ethical, responsible, critical and capable of continuing to learn. Education also serves society by providing a critical reflection on the world, especially its failings and injustices, and by promoting greater consciousness and awareness, exploring new visions and concepts, and inventing new techniques and tools. Education is also the means for disseminating knowledge and developing skills, for bringing about desired changes in behaviours, values and lifestyles, and for promoting public support for the continuing and fundamental changes that will be required if humanity is to alter its course, leaving the familiar path that is leading towards growing difficulties, and starting the uphill climb towards

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[6] Stewart, Douglas. "Purposes of Public Education: Philosophical Reflections." *Education Canada*, Canadian Education Association, 2005, 4-7.
[7] Canadian Education Association (CEA). *Fostering the Minds of Young Canadians: Implications for Governments and NGOs*, Report of the Canadian Education Forum Held in Ottawa on June 3-4, 2004, CEA, 2004; accessed January 2005; available from http://www.cea-ace.ca/dia.cfm?subsection=cef.

sustainability. Education, in short, is humanity's best hope and most effective means to the quest to achieve sustainable development.[8]

The UN also has introduced the concept of quality education into its goals and targets and defines what it considers the essential characteristics of a quality education to be. According to the UN Ministerial Round Table on Quality Education:

Quality education:

- supports a rights-based approach to all educational endeavours. Education is a human right, and therefore quality education supports all of the human rights;
- is based on the four pillars of Education for All—learning to know, learning to do, learning to live together and with others, and learning to be;
- views the learner as an individual, a family member, community member, and a global citizen and educates to create individual competency in all four roles;
- upholds and conveys the ideals of a sustainable world—a world that is just, equitable, and peaceable, in which individuals care for the environment to contribute to intergenerational equity;
- takes into consideration the social, economic, and environmental contexts of a particular place and shapes the curriculum or programme to reflect these unique conditions. Quality education is locally relevant and culturally appropriate;
- is informed by the past (e.g., Indigenous and traditional knowledge), is relevant to the present, and prepares individuals for the future;
- builds knowledge, life skills, perspectives, attitudes and values;
- provides the tools to transform current societies to more sustainable societies;
- is measurable.[9]

The question educators and others are increasingly asking, therefore, is which knowledge, skills, and attitudes are most important for students, and for the population in general, to acquire. Although he doesn't mention either sustainability or the environment, Jerry Gaff of the Association of American Colleges and Universities (AAC&U) observes there is a general consensus among a wide range of interest groups about what constitutes an educated person or society:[10]

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[8] United Nations Educational Scientific and Cultural Organization (UNESCO). *Educating for a Sustainable Future: A Transdisciplinary Vision for Concerted Action*, International Conference in Thessaloniki, December 9-12, 1997, 1998; accessed March 2005; available from http://unesdoc.unesco.org/images/0011/001106/110686eo.pdf.

[9] UN Ministerial Round Table on Quality Education cited in United Nations Educational Scientific and Cultural Organization (UNESCO). *Education for Sustainable Development: United Nations Decade (2005-2014)*, 2005; accessed March 2005; available from http://portal.unesco.org/education/en/ev.php-URL_ID=27542&URL_DO=DO_TOPIC&URL_SECTION=201.html.

[10] Gaff, Jerry G. "What Is a Generally Educated Person?," *Peer Review*, no. Fall, 2004: 4-7; Association of American Colleges and Universities.

- breadth of knowledge, especially in the natural sciences, social sciences, humanities, and arts
- capacity for lifelong learning
- ability to analyze, communicate, and integrate ideas
- collaborative problem-solving skills
- effectiveness in dealing with values
- intercultural knowledge relating to diverse individuals
- proactive sense of responsibility for individual, civic, and social choices[11]

Nicholas Maxwell of the University of London critiques standard education systems as trying to solve problems of knowledge rather than problems of living.[12] He boils down what we need to know into two categories reflecting the two great problems of learning confronting humanity:

1. We need to learn about the nature of the universe and about ourselves as part of the universe.
2. We need to learn to live wisely.[13]

Wisdom, for Maxwell, is the capacity to discriminate what is valuable for oneself, society, and the ecosystem. It includes knowledge, understanding, and technological know-how. This knowledge and wisdom can be held by institutions, societies and cultures, as well as by individuals. Maxwell proposes that the basic aim of learning should be to promote wisdom rather than just to acquire knowledge, since knowledge without the wisdom to use it beneficially can be extremely dangerous, as seen in its use for war and environmental damage.[14]

This is the kind of broad "outcome" approach that fits and is appropriate to the vision, goals, and objectives of GNH, and it will therefore be explored here. It is an approach that goes well beyond standard issues like educational system participation, graduation rates, and spending on education, which may have limited relation to societal outcomes.

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[11] Ibid.

[12] Maxwell, Nicholas. *Do We Need an Academic Revolution*, London, University of London, n.d.; accessed February 2005; available from http://www.the-rathouse.com/maxacadrev.html.

[13] Maxwell, Nicholas. "Two Great Problems of Learning," *Teaching in Higher Education*, vol. 8, no. 1, 2003: 129-134.

[14] Maxwell. *Do We Need an Academic Revolution*, accessed.

Values

According to Lourdes Quisumbing, President of the United Nations Educational, Scientific and Cultural Organization-Asia-Pacific Network for International Education and Values Education (UNESCO-APNIEVE), values are an integral component of basic education and are needed for an individual "to survive, to live and work in dignity, and to continue learning."[15] The Bhutanese government also plans to base its new educational curriculum on broadly accepted GNH values such as fostering a healthy and well-educated population, environmental quality, security, equity, and social inclusion. Any measure of progress is based on the implicit question, "progress towards *what*?" and is therefore normative by its very nature. The measure assesses progress towards defined goals, and therefore inherently embodies a vision or ideal towards which society aspires. In other words, it is literally not possible to measure progress without a clearly defined sense of what it is that society wants to achieve, which in turn is based on basic values.

Values are moral or ethical convictions on which a population bases its sense of purpose, goals, or directions to guide its actions.[16] Values are "the basic *learned* motivators of human behaviour."[17] Essentially, values can help discriminate between what is beneficial and what is detrimental to society. Values are also referred to in the literature as attitudes, beliefs, convictions, principles, or virtues.

Quisumbing suggests:

> Even if not explicitly stated, or perhaps not even consciously intended, values and attitudes underlie the criteria and indicators in assessing all the areas of educational goals and objectives […]. It is only when we have the power to value that we will be able to distinguish the essential from the nonessential, and to realize that the dignity of the human person and the excellence of the human spirit are the ultimate criteria of quality.[18]

Canadian educational fora have also stressed moral or value education in curriculum goals. For example, *The Atlantic Canada Framework for Essential Graduation Learnings in Schools,* which was produced following public consultations, describes skills and

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[15] Quisumbing, Lourdes R. *The Values /Attitudinal Dimension in Quality Education*, Beijing, International Forum on Quality Education, 2001; accessed March 2005; available from http://unesco.edna.edu.au/documents/BEIJINGpaper.pdf.

[16] Heylighen, Francis. "What Is a World View?," in *Principia Cybernetica Web*, ed. Heylighen, F., C. Joslyn and V. Turchin. Brussels: Principia Cybernetica, accessed January 2005, available from http://pespmc1.vub.ac.be/WORLVIEW.html, 2002.

[17] Adams, Michael. *Fire and Ice: The United States, Canada and the Myth of Converging Values*, Toronto: Penguin Canada, 2003.

[18] Quisumbing. *The Values /Attitudinal Dimension in Quality Education*, accessed.

attitudes that all students are expected to demonstrate prior to graduation.[19] Attitudes related to values in this framework include the abilities:

- to understand sustainable development and its implications for the environment;
- to examine human rights issues and recognize forms of discrimination;
- to determine principles and actions of just, pluralistic and democratic societies;
- to reflect critically on ethical issues; and
- to understand their own and others' cultural heritage, cultural identity and the contribution of multiculturalism to society.

The framework specifies that student attitudes should be assessed indirectly within classrooms by teachers using a variety of assessment strategies, including portfolios, performances, essays, and projects.

The key question is whether current educational institutions and curricula fulfill these stated goals. Unfortunately, few conventional indicators of educational attainment even ask this question, or attempt to relate what they report to such fundamental statements of educational purpose, shared values, and desired societal outcomes. For the most part these conventional indicators simply focus on quantitative measures such as the number of graduates and high school dropouts, rates of participation, and overall spending on education. Qualitative measures, such as assessments of the capacity of educational systems to reflect specified values, are usually absent.

Challenges to assessing trends in education

With few exceptions, the model used by the vast majority of large-scale education indicator projects is the productivity model—which reflects the curriculum and underlying values of the education system. Despite the popularity of the productivity model, however, there have been numerous objections to its use, including the criticism that it implies the application of an "industrial model" to the education system, where students are viewed as "raw materials" to be processed in schools.[20]

Another key criticism of most education indicator systems developed to date is that they are mainly concerned with descriptive or comparative data on educational spending, enrolment, and levels of school attainment and achievement, rather than with providing an analytical tool as their primary function.[21, 22] In Canada, for example, the Council of

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[19] Atlantic Provinces Education Foundation (APEF). *The Atlantic Canada Framework for Essential Graduation Learnings in Schools*, APEF, 1998; accessed January 2005; available from http://camet-camef.ca/default.asp?mn=1.7.

[20] Special Study Panel on Education Indicators. *Education Counts. An Indicator System to Monitor the Nation's Educational Health*, Washington, D.C.: National Centre for Education Statistics, 1991. p. 9.

[21] Crocker, Robert K. *Learning Outcomes: A Critical Review of the State of the Field in Canada*, Canadian Education Statistics Council, 2002; accessed January 2005; available from http://www.cmec.ca/stats/pcera/LearningOutcomes_StateoftheField_RCrocker2002.pdf. p. 21.

Ministers of Education has implemented the School Achievement Indicators Program (SAIP), which is sometimes considered a comprehensive indicator program to assess educational attainment. However, it concerns itself only with indicators of school achievement. As it is currently configured, the SAIP assesses student performance in the areas of mathematics, science, reading and writing.[23] There is no reference to the wider social purposes of education referenced above.

It has also been argued that student assessment programs are "often a reactionary measure to external calls for accountability" rather than an attempt to "appraise the student as an entire educated human being."[24] For example, throughout the 1980s and 1990s, publicly funded institutions in the U.S., including colleges and universities, were compelled to show reasons for continued investment of public money and were mandated by state legislatures to assess and report their performance based on a set of indicators.

According to one critic, the economic pressure placed on the education system to supply the skills required by the global market changes the role of school education from serving "the betterment of society through a more educated citizenry" to "how best to control education by making it do its economic work through greater explicit emphasis on vocationalism, as well as by changing the ideology and the discourse of schooling."[25] Perhaps what is most problematic about defining education in a way that serves narrow economic imperatives is that broader considerations such as the "the role of schooling in social justice, the inculcation of democratic values and the transmission of cultural values and forms of knowledge" become marginalized.[26]

Robert Crocker echoes this view observing that "generic outcomes such as ability to function in a democratic society, social responsibility, critical thinking, lifelong learning, personal management, or teamwork are not adequately represented in the outcome statements found in most curriculum documents."[27] Similarly, this literature review has found that the corresponding conventional indicators as they currently exist are also too limited, and that many key societal outcomes of education are not adequately represented.

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[22] Schulz, Henry, Glenn Clark, and Robert Crocker. *Learning Outcomes*, Discussion paper prepared for the Council of Ministers of Education, Canada in support of the Pan-Canadian Education Research Agenda, 1998; accessed May 2005; available from http://www.cmec.ca/stats/pcera/compaper/98-25en.pdf.p. 5.
[23] Council of Ministers of Education Canada (CMEC). *The School Achievement Indicators Program (SAIP)*, 2005; accessed May 4 2005; available from http://www.cmec.ca/saip/indexe.stm.
[24] Sims, Serbrenia J. *Student Outcomes Assessment. A Historical Review and Guide to Program Development*, New York: Greenwood Press, 1992. p. 23, 110.
[25] Neal, John E. "Overview of Policy and Practice: Differences and Similarities in Developing Higher Education Accountability," in *Assessing Performance in an Age of Accountability: Case Studies*, ed. Gaither, Gerald H. San Francisco: Jossey-Bass, 1995. p. 6.
[26] Smyth, John, and Alastair Dow. "What's Wrong with Outcomes? Spotter Planes, Action Plans, and Steerage of the Educational Workplace," *British Journal of Sociology of Education*, vol. 19, no. 3, 1998: 291-303. p. 299.
[27] Crocker. *Learning Outcomes: A Critical Review of the State of the Field in Canada*, accessed. p. 24.

With a few exceptions, the conventional indicators also do not tell us much about the *quality* of education and whether it is successful in creating an educated populace. For instance, these indicators do not tell us whether students have learned to think critically and to make well-informed choices. The indicators are also generally confined to the formal education system and do not take into account the education that takes place in informal and nonformal systems such as the home, and from the media, where a great deal of learning takes place.

It is clear from this literature review that current indicators of educational attainment tend to reflect societal priorities that do not always or necessarily further wellbeing. For example, indicators of educational evaluation increasingly are based on accountability for "returns on investment" to "stakeholders" rather on broader contributions to society. Most of the rhetoric about education for the "new economy" actually focuses on the need to enhance human economic productivity rather than on the need for a sustainable economic system that can enhance long-term wellbeing. Descriptions of the needs of the new "knowledge economy" call for new knowledge-based skills such as those requiring enhanced cognitive problem-solving abilities, the ability to decode large amounts of complex information, the ability to adapt to constant change and insecurity, and the ability to work in teams and to tap resources of creativity. While these skills can certainly produce desirable societal outcomes, the anticipated outcomes that are specified are often narrowly confined to market competitiveness and production, and tend to value self-direction and individual initiative over the social goals traditionally valued by societies such as Bhutan, which value compassion and cooperation over individual competitiveness.

A GNH curriculum that produces an educated populace should certainly include cognitive development. But a broad wellbeing perspective like that of GNH requires that the curricula also reflect the importance of the creative and emotional health of learners so that Bhutanese youth can become more aware of contextual situations and systems, social and economic interconnections, current world events, the processes of the natural world, and the influence of current lifestyles on the choices of future generations. For example, effective education from a GNH perspective should be reflected in greater social tolerance, cultural diversity, gender equality, corporate responsibility, and environmental stewardship. In light of the earlier UNESCO statement that education is the most effective means to achieve those outcomes, then, from the broad GNH perspective proposed here, failure in those realms might be seen as failures in education.

Even from a narrower productivity perspective, proxy variables such as the number of years of schooling or the highest educational credential, which are most often used in lieu of direct observation of learning outcomes, skills, and competencies, do not give policy makers or employers an accurate assessment of the capabilities of the potential workforce. Individuals who have the same credentials do not all have the same knowledge or skills, and learning does not stop with attainment of the credential. Knowledge and skills acquired outside the formal learning network are rarely reflected in

conventional measures of educational attainment, and it is often impossible to distinguish specific learning activities from other activities that may produce significant learning as a by-product of experience. In addition, the specific skill requirements of jobs change over time and are difficult to determine and measure according to fixed or standard evaluation and assessment tools. Indeed, the time lag between changes in assessment tools and the advent of new job-related skill requirements can result in a mismatch between the skills needed in the job market and the actual skills embedded in the population.

For all of these reasons, and based on the expert critiques that are summarized in this literature review, the weight of evidence points to the necessity of going beyond the conventional Western education curriculum, indicators and models in order to design a Bhutanese curriculum that will reflect GHN values and principles and produce an educated Bhutanese populace.

Shifting Trends

As previously noted, radical changes are happening within the fields of education and lifelong learning, as reflected in recent statements from representatives of mainstream education institutions like UNESCO, the Canadian Education Association, the Association of American Colleges and Universities, and the Canadian Alliance of Education and Training Organizations (CAETO). These involve three major shifts in thinking and knowledge that are driving new developments: a shift from education as purely schooling to learning and lifelong learning; a shift from a reductionist view to a holistic view; and a shift from basic literacy to new literacies emphasizing what we need to know to live sustainably and to create a sustainable society that enhances long-term wellbeing.

1. Shift from education as schooling to learning and lifelong-lifewide learning

The concept of education is frequently and mistakenly associated with "schooling." Education, however, involves learning throughout the life course and does not stop when formal schooling ends. Lifelong learning has become as important as schooling, and involves more than adding value to previous formal education. It marks a new direction in thinking about education. Tuijnman and Bostrom remark that this shift is significant, since it means that the responsibility for learning is shifted from structures and institutions to learners themselves, who need to be motivated and able to manage their own learning.[28] Essentially, learners need to know *how* to learn. The emphasis shifts from being knowledge- and information-based to being skills- and values-based. In other words, the person is no longer viewed as needing to be "filled up" with information, but rather, is required to know how to find the necessary information and to be able to use it

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[28] Tuijnman, Albert, and Ann-Kristin Bostrom. "Changing Notions of Lifelong Education and Lifelong Learning," *International Review of Education*, vol. 48, no. 1/2, 2002: 93-110.

to create knowledge.[29] In this new way of looking at education, knowledge is not something accumulated in the student's mind. It is externalized, shared, and produced by collaborative and collective effort.[30]

Gerhard Fischer of the University of Colorado suggests that this change of perspective indicates a change of mindset that values the motivation, interest level, and participation of learners. He sums up the change in perspectives:

> A lifelong learning perspective requires that we change mindsets. This will include, for example, that we see and understand breakdowns and symmetry of ignorance as opportunities rather than as things to be avoided; that teachers understand their roles not only as truth-tellers and oracles, but as coaches, facilitators, and mentors; and that knowledge is not presented as a commodity to be acquired or delivered, but as a human struggle to understand and as a source to deal with personally meaningful problems.[31]

Work on developing lifelong learning initiatives, policies, strategies, and research is taking many directions in Canada, mainly in the areas of adult education and labour force development. These new directions might inform the development of GNH curriculum and educational processes.

2. Shift from the education and schooling domains to the community, workplace, home, and environment:

Lifewide learning

Lifewide learning refers to the fact that learning takes place in many settings other than schools and universities, in both nonformal and informal modes.**[32]** In environmental, social, and economic domains, informal and nonformal learning are important expressions of this shift from a focus on formal schooling to a broader understanding of how learning actually happens.

Informal learning

The general public often thinks of lifelong learning as lifelong "schooling." David Livingstone, for example, found that when people were asked about their learning on

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[29] Longworth, Norman. *Lifelong Learning in Action: Transforming Education in the 21st Century*, London, U.K.: Kogan Page Ltd., 2003.

[30] Fischer, Gerhard. *Lifelong Learning: Changing Mindsets*, Center for Lifelong Learning & Design (L3D), Department of Computer Science and Institute of Cognitive Science, University of Colorado, 1999; accessed March 2005; available from http://l3d.cs.colorado.edu/~gerhard/papers/icce99.pdf.

[31] Ibid., accessed. p. 11.

[32] Colardyn, Danielle, and Jens Bjornavold. "Validation of Formal, Non-Formal and Informal Learning: Policy and Practices in E.U. Member States," *European Journal of Education*, vol. 39, no. 1, 2004: 69-89.

questionnaires that didn't explain the term, they would mark "not applicable" if they were not enrolled in a course or program.[33]

Much of what we know, however, we have learned outside formal school settings: cumulatively over an extended period of time; in concert with friends, colleagues, or relatives; in a variety of contexts—such as the workplace, community, church, library, and home; through a variety of activities, including leisure (such as reading books or using the Internet) and physical activities; and by attending cultural events or civic / community meetings. As one researcher recalls, if you ask any group of people whether they learned the most important things in their lives in school or out of school, most people say "out of school."[34] Formal schooling is a finite part of one's life, but informal learning is continuous and never ends—it lasts a lifetime.

David Livingstone of the Centre for Study of Education and Work at the University of Toronto, a major researcher in the fields of learning, work, and informal learning, calls what we presently know about informal learning the "tip of the iceberg."[35] Information on learning that ignores this aspect of education, according to Livingstone, provides a very limited view of knowledge and learning within society, and gives both policy makers and employers a distorted view of what is needed in terms of education and skills for social and economic progress. The study and understanding of informal learning, by contrast, gives greater prominence to the needs of the learner than the common practice of trying to fit the learner into particular structures that may or may not be relevant to the learner.

Research to date on informal learning includes information on the process of learning, the areas and activities of learning, and the amount of time spent on these activities. Very little research has focused on knowledge outcomes.[36] The Centre for the Study of Education and Work (CSEW) at the Ontario Institute for Studies in Education (OISE) of the University of Toronto is working on developing a coordinated national framework for documenting adult formal and informal learning trends through national surveys.**[37]**

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[33] Livingstone, David, cited in Myers, Douglas. *Building Community Learning Capacity: Utilizing Community Learning Assets*, Halifax, Nova Scotia, The Prior Learning Assessment Centre, 2003; accessed January 2005; available from http://www.placentre.ns.ca/corporate/res.php.

[34] Ibid., accessed.

[35] Livingstone, David. *Mapping the Iceberg*, Toronto, NALL Working Paper 54, The Research Network on New Approaches to Lifelong Learning (NALL), Ontario Institute for Studies in Education (OISE), University of Toronto, 2002; accessed April 2005; available from http://www.oise.utoronto.ca/depts/sese/csew/nall/res/index.htm.

[36] Livingstone, David W. *Exploring the Icebergs of Adult Learning: Findings of the First Canadian Survey of Informal Learning Practices*, Toronto, The Research Network on New Approaches to Lifelong Learning (NALL), Ontario Institute for Studies in Education (OISE), University of Toronto, 1999; accessed April 2005; available from http://www.oise.utoronto.ca/depts/sese/csew/nall/res/index.htm.

[37] Livingstone, David W. "Expanding the Field of Adult Education Research in Canada." Paper presented at the Building the Future of Adult Learning in Canada: A Reflexive Dialogue, Halifax, Nova Scotia, April 24-26, 2005, Centre for the Study of Education and Work, Ontario Institute for Studies in Education of the University of Toronto; accessed May 2005; available from http://wall.oise.utoronto.ca/updates/updates_page.htm.

Nonformal learning

Nonformal learning includes taught courses or lectures that do not constitute a continuous ladder of education leading to a formal qualification in the educational system.[38] It can refer to courses taken for personal interest to enrich one's life, such as watercolor painting, computer use, carpentry, or kayaking, or to courses taken to upgrade skills or otherwise contribute to employment-related initiatives. There is an overlap between adult education and training and nonformal learning, although some adult education is formal, leading to recognized credentials and qualifications. Nonformal education, however, is actually broader in view and concept. Nonformal education can also take place in many settings, including formal educational institutions, community centres, on-the-job training, and distance education through the Internet. Nonformal education also can offer educational opportunities to a diverse range of learners, from high school dropouts, to rural women, the unemployed, and the retired.

The most comprehensive source of data on adult education and training in Canada is the Adult Education and Training Survey (AETS), which is also the only national survey to detail efforts by individuals and organizations to develop skills.[39] Data from the AETS are used to indicate participation in adult education in the Pan-Canadian Education Indicators list. The AETS includes formal and nonformal learning in all locations, including university and college, private and commercial institutions, onsite workplace training, and distance education over the Internet.

3. Shift from a reductionist view to a holistic view

There is a shift in both scientific and educational thinking from reductionist ways of studying phenomena to studying phenomena using more holistic perspectives. The reductionist model, which divides reality and educational curricula into separate disciplines or components, is concerned with reducing the whole to its parts in order to study and analyze them more easily. Holistic or system-based ideas are based on viewing the undivided whole and, as such, focus on interconnectedness, multidisciplines, multicultures, diversity, and pattern thinking. This general societal shift towards systems thinking has ramifications for education. For example, the need to integrate disciplines in order to increase understanding of complex phenomena is now widely accepted in the research and education communities.

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[38] Desjardins, Richard. "The Effects of Learning on Economic and Social Wellbeing: A Comparative Analysis," *Peabody Journal of Education*, vol. 76, no. 3&4, 2001: 222-246.
[39] Statistics Canada. *Adult Education and Training Survey (AETS)*, Statistics Canada, 2004; accessed March 2005; available from http://www.statcan.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3879&lang=en&db=IMDB&dbg=f&adm=8&dis=2.

4. Shift in focus from basic literacy alone to the importance of new literacies that reflect what we need to know as social beings

Basic literacy is generally associated with the ability to read, write, speak, and count. The term *literacy* has expanded recently to include other areas that reflect what the population needs to know to function effectively in society. This includes knowledge needed to be literate in the areas of health, civics, ecology, science, technology and computers, media (the ability to critically interpret television and film media), and culture (knowing the meanings of customs, metaphors, historical references, and literary allusions in common use), among others.[40] These newly defined literacies are explored further in Part IV, Document 2 of this review.

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[40] Joint Centre of Excellence for Research on Immigration and Settlement (CERIS). *Meanings of Literacy*, Toronto, CERIS, 2005; accessed February 2005; available from http://ceris.metropolis.net.

GPIAtlantic

PART I

CONCEPTUAL OVERVIEW
AND
FRAMEWORK

1. Conceptual Framework

We did not weave the web of life. We are merely a strand in it. Whatever we do to the web, we do to ourselves.

Chief Seattle[41]

1.1 Role of education in population wellbeing

It is not education, but education of a certain kind, that will save us. And the current model of Western, urban-centered, school-based education, which is so often more focused on turning children into efficient corporate units rather than curious and open-minded adults, will only lead us further down the wrong path.

David W. Orr[42]

Because we value education we should measure it. But the unintended effect is deceptive: We begin to value only what we can measure. Eventually our hopes for what education can become are reduced to numbers, impressive in their apparent precision but silent on the essential meaning of learning in a free society.

Special Study Panel on Education Indicators,
U.S. National Centre for Education Statistics[43]

It is now widely acknowledged that the conventional adherence to GDP-based measures of progress, which effectively attribute an economic value of zero to non-market activities, sends misleading and dangerous signals to policy-makers. Such measures mistakenly count the depletion of natural wealth as economic gain, render unpaid contributions to wellbeing (like volunteer work) invisible and therefore valueless, make no distinction between economic activities that contribute to or undermine wellbeing, and do not report on how income is shared and distributed. Core measures of progress, and the policy signals they send, such as those which are GNH-based, include key information about our wellbeing, will help to prioritise policy decisions, and will reflect broader social values and interests.

From the perspective of GNH principles, money spent on education is seen as an investment, because a more highly educated populace is an asset to society and to the

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[41] Chief Seattle cited in Capra, Fritjof. *Ecoliteracy: The Challenge for Education in the Next Century*, Schumacher Lecture, Center for Ecoliteracy, 1999; accessed August 2004; available from http://www.ecoliteracy.org/pages/publications.

[42] Orr, David W. "Education for Globalization," *The Ecologist*, vol. 29, no. 3, 1999: 166-169.

[43] Special Study Panel on Education Indicators. *Education Counts. An Indicator System to Monitor the Nation's Educational Health*. p. 5.

economy. A decline in knowledge, training, and educational investment will likely result in a decline in our stock of human capital, which includes the entire life experience of the population—in short, the time, personal skills, capabilities, experiences, health, and knowledge of individuals. Essentially, "human capital theory holds that the wellbeing of modern society is dependent not only on traditional capital and labour but also on the knowledge and ideas possessed and generated by individual workers. Education is the primary source of this human capital."[44]

Abundant evidence, some of which is summarized in previous reports by Genuine Progress Index Atlantic (GPI), have indicated that education has a significant effect on wellbeing and quality of life in terms of its impact on income, population health, and environmental quality. However, it is not easy to relate educational processes to societal outcomes. Education and knowledge in the broadest sense are basic conditions required for behaviour to change. But possession of an educational credential does not necessarily mean that knowledge will be used to benefit society or enhance societal wellbeing. For example, highly educated people often consume more resources and have a greater impact on the environment than those with less formal education. In this literature review, we shall therefore address the gap between knowledge and action, and explore ways in which a GNH education curriculum system can to relate education to social outcomes. We address this question in part by attempting to define the broader goals and purposes of education within society. Because education is arguably central to societal transformation and change in many areas, it is also crucial in linking all the components of the GNH pillars and in identifying key social policy issues.

This is the kind of broad outcome approach that is necessary to consider in developing the new curricula. This literature review therefore identifies a broader spectrum of areas that are considered relevant to the selection of curricula for an educated populace than is common, and explores the major approaches and trends within each of those areas.

1.1.1 Principled ground of education

In a series of personal correspondences and conversations with the authors of this literature review over a six-month period, John McMurtry of the University of Guelph recommended that the essential and universal "principled ground" upon which this analysis is based be explicitly defined. The definition of this principled ground could then be used as the criterion needed to distinguish authentic education and knowledge from the dominant trends "in the name of education and knowledge," which, McMurtry argues, are anti-educational in principle.[45] McMurtry observes that a principled ground that is neither

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[44] Crocker, Robert K. *Learning Outcomes: A Critical Review of the State of the Field in Canada*, Canadian Education Statistics Council, 2002; accessed January 2005; available from http://www.cmec.ca/stats/pcera/LearningOutcomes_StateoftheField_RCrocker2002.pdf. p. 2.

[45] McMurtry, John, Professor of Philosophy, University of Guelph, personal communication with Karen Hayward, Reviewer comments, email correspondence, July 27 and August 23, 2006.

too broad nor too narrow can provide an effective criterion of measure and a coherent logic or relationship between educational processes and structures on the one hand and societal outcomes on the other. Using a clear, principled base that would distinguish what education is from what it is not, he notes, is necessary not only to provide clear justifying reasons for indicator choices made, but also "to establish a frame of analysis so that all that is reported as pro and con, success and failure, positive and negative trends all hang together in terms of this unifying frame."

In a 1988 study on educating for critical thought, McMurtry provides a description of what does and does not qualify as education:

> [W]e need to be clear […] as to what education is and what it is not. It is not propaganda on behalf of the social status quo, however reassuring to conditioned assumptions such a function may be. It is not public opinion or interest group mollification any more than nuclear physics or language studies are. It is not acquiescent to prescribed doctrine, but in Western thought above all, questions received prejudices and seeks reasoned understanding of forms of life. Its final authority lies not in political pressure groups, principals, or even ministers of education, but in the subject matters and methods of inquiry themselves. The education system, in short, is governed by its own disciplines of research and expression, not by special interests and demands, or it is not education.[46]

McMurtry formally defines this principled ground, which can be applied to formal, nonformal, and informal educational processes, as follows:

> The principled ground and criterion of education that has been proposed is: those processes of the society that enable learning which is not instrumental to a non-learning goal such as private profit, sectarian belief, or other ulterior purpose that does not enable a more inclusively coherent understanding of human and natural phenomena.[47]

We have adopted this definition of the principled ground of education and learning, as proposed by McMurtry, as the main criterion for defining indicators of an educated populace throughout this review.

McMurtry distinguishes the difference between formal and informal (or nonformal) education by the codified forms of understanding and communication that exist in different educational processes and structures, and by the "recognized institutional forms

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[footnote] , _____, Professor of Philosophy, University of Guelph, personal communication with Linda Pannozzo, Reviewer comments, email correspondence, September 25, 2006 and January 5, 2007. The following discussion, except where noted, is taken from these correspondences.

[46] McMurtry, John "The History of Inquiry and Social Reproduction: Educating for Critical Thought," *Interchange*, vol. 19, no. 1, 1988: 31-45. p. 41.

[47] McMurtry, Professor of Philosophy, University of Guelph, personal communication.

of advance and dissemination," found in formal education systems. However, he suggests that "both are educational to the extent that they enable a more inclusively coherent understanding of human and natural phenomena." In particular, McMurtry rules out as anti-educational any "inculcation of ideas, principles, or habits of mind that do not enable a more inclusive and coherent understanding of natural and human phenomena, but block such understanding." Examples of the latter include "racist or sexist indoctrination, for-profit selection of research objectives, ecologically destructive perspectives or training, or unreasoning intolerance of other understanding."[48]

In the informal domain, McMurtry notes that this criterion can include the learning processes and work done in important institutions "that are not standardly recognized as educational and ought to be." Institutions of informal learning included by McMurtry are "non-profit education broadcasting, learning associations not funded by partisan or commercial interests, public science and art centres, and regular learning-discussion institutions of various kinds whose object is better understanding." Throughout the literature review, we discuss various Western institutions of these types and their contributions to learning. In applying his principled ground to informal learning, McMurtry suggests that the learning or ignorance in matters of gender, race, cultural tolerance, ecological awareness, corporate responsibility, and so on can all be evaluated on the basis of this criterion:

> All of these are forms of understanding express educational attainment, or lack of it, insofar as they enable a more inclusively coherent understanding of human and natural phenomena. The same principle holds across all spheres, and allows us to include these very important forms of understanding as far as we are able in a consistent manner. For example, sexism or racism score very badly on the criterion of education, and [the principled ground] explains exactly why. Both are incoherent in principle and non-inclusive in what they take into account as fact and as value. The same is true of ecological or corporate irresponsibility. Consistent and exact principled grounds enable us to identify attainments, shortfalls, and trends across informal and formal education spheres as far as is logistically feasible. In all cases, the prior state of the sphere in question can provide a basic reference body from which to evaluate or measure an educated populace.[49]

McMurtry notes that formal education in particular is genuine when it includes "the learning of capabilities to think independently, literately, and constructively in evolved codes of human understanding of which academic disciplines are the prime bearers." As an example, McMurtry observes that the distinction between "what counts and does not in the educated populace domain" is determined by whether or not the learning process is open to contrary facts or counterargument. Genuine education, unlike propaganda or commercial media entertainment, enables "consistent comprehension of evidence by

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[48] Ibid., personal communication.
[49] Ibid., personal communication.

principles of reason rather than sales, and the criterion of principled ground enables such a clear distinction."[50]

McMurtry has long been critical of the lack of critical intelligence in formal education systems and, in particular, of "schools' repression of critical inquiry and reflection."[51] In 1988, he commented: "Human learning in the species sense develops in proportion to the extent that this critical intelligence is able to flourish."[52] In the same study, McMurtry argues such learning is not currently the norm:

> It is in this rigid conformity to the social given that the anti-educative function of the schools is hidden […]. In the schools, there is no right to or duty of academic freedom of teachers or students; and no right of appeal to the authority of evidence and argument to determine what may or may not be taught and learned. The matter is decided by authorities external to the subject discipline itself, and they normally caution against or rule out whatever might be perceived as a challenge to prevailing opinion and power […].

> Where such suspension of scholarly standards on issues of the very deepest importance to human understanding and development is practiced by the schools as a matter of established routine, then we cannot in truth call this system "educational." […] Stated as a formula, *x is educational if and only if x enables a more inclusive range of thought, experience, or action.* It follows, then, that a school curriculum, hidden or overt, which prevents the broadening of these very scopes of possibility by ruling out consideration of their most basic parameters of determination is not educational but anti-educational to the extent that it so prohibits […].

> The practice of ruling out inquiry into the social forms within which we live and reproduce is not only contra-educative in principle (it prohibits the more inclusive ranges of understanding, in particular critical understanding, that it is the aim of education to develop), it is also, to compound the irony, in opposition to the very traditional values it purports to serve.[53]

Bhutan is committed to including principled grounds of education into its education system, such as recommended by McMurtry, in a way that will enable the Bhutanese society to become an educated populace. The recommendations concerning the development of a new education curriculum based on GNH values and principles and designed to create an educated Bhutanese populace are therefore based on the principled ground described above, which enables a more inclusively coherent understanding of human and natural phenomena as a learning goal, divorced from goals such as those of

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[50] Ibid., personal communication.
[51] McMurtry. "The History of Inquiry and Social Reproduction: Educating for Critical Thought." p. 38.
[52] Ibid. p. 33.
[53] Ibid. pp. 37–39.

private profit and sectarian beliefs that do not have learning as their primary focus. In addition, the recommendations are based on the assumption that this "inclusive understanding of human and natural phenomena" must be translated into action and into social outcomes that foster an inclusive, healthy, and sustainable Bhutanese society.

1.1.2 Current Western economic approaches to education

In this review, we first examine the conventional Western education systems currently in use and indicate how the Bhutanese GNH approach will necessarily differ from the conventional Western approach to education. As we will see in Chapter 2, the literature reviewed found most Western education initiatives today take an economic approach to education, and are driven by the assumption that economic growth and higher incomes will lead to the wellbeing of society. The call from almost all sectors is to create a new "knowledge economy" or "information society" by upgrading the technical skills and proficiencies of the workforce to meet the new challenges of competition and technological innovations.

Central to this is the stated need for education to prepare students to fit into the new workforce. High grades in school, participation in postsecondary education, and attainment of a lucrative career are assumed to increase personal benefit and also strengthen and grow the economy. The goal is a materially comfortable lifestyle that minimizes inconvenience and, presumably, maximizes overall wellbeing. These may be reasonable goals but, with the emphasis mostly on material gain, the focus of education becomes narrowed, and the central challenge of sustainability is not addressed. In addition, focusing on preparing students for an unsustainable society might not be the most beneficial outcome in the long run.

Preparing students for the job market is important but is only part of what is needed to enhance quality of life and wellbeing. Jeremy Rifkin, looking at the possibility of civic society, or the "Third Sector," for creating new jobs, remarks that business leaders worry there will not be enough jobs to go around in the knowledge society.[54] He notes that the manufacturing and service sectors of society are rapidly automating production and reforming their infrastructures to use fewer workers. The manufacturing sectors have automated or moved to more impoverished countries. Banking, insurance, the wholesale and retail sectors, and companies in other sectors are automating their services and need only small, highly-skilled professional teams that are technologically literate. Rifkin argues that the new "knowledge sector" will be limited to an elite labour force consisting of engineers, highly skilled technicians, computer programmers, scientists, and professionals who will not be able to replace all of the displaced workers. As a consequence, Rifkin therefore predicts that the knowledge economy will produce higher

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[54] Rifkin, Jeremy. "Rethinking the Mission of American Education," *Education Week News*, no. January 31, 1996.

levels of unemployment, unless it completely rethinks its long-held assumptions about the nature of education.[55]

Underlying the economic approach to education is the deep-seated worldview in Western countries that *progress* is synonymous with *material progress*, or the accumulation of more goods and services. This approach, which is based on the values of the populace, relates to standard of living rather than quality of life, the latter of which includes total wellbeing rather than only material wellbeing.

Richard Eckersley gives three reasons why this economic rationale is flawed:

1. it reflects too narrow a view of human well-being, and fails to explain why, after 50 years of rapid growth, so many people today appear to believe life is getting worse;
2. it overestimates the extent to which past improvements in material well-being are attributable to growth; and
3. it underestimates the gulf between the magnitude of the environmental challenges we face and the scale of our responses to them.[56]

Eckersley notes that the developed nations continue to define progress mainly in material terms equating "more with better." The question of progress, however, needs to include social and environmental factors that contribute to sustainable development. These factors include ecological sustainability, quality of life, equity, and wellbeing with its physical, mental, social, and spiritual dimensions. Eckersley notes that the divisions between material progress and sustainable development may not be clear-cut:

> For example, improvement in material well-being need not require economic growth; economic growth may improve quality of life in some circumstances but not others; and sustainable development could involve economic growth, but of a different sort from the growth we have today. Another key feature of progress, technological innovation, drives economic growth, but will be as important to sustainable development.[57]

Eckersley emphasizes that the debate about progress is not necessarily growth versus no-growth. We need, instead, to ask what is growing, what other effects this growth is having, and what the alternatives are. He suggests that this is not to take a stance against the economy, business, or technological innovation, but that "these activities need to be driven by different values towards different ends." He continues:

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[55] Ibid.

[56] Eckersley, Richard. "Perspectives on Progress: Economic Growth, Quality of Life and Ecological Sustainability," in *Measuring Progress: Is Life Getting Better?*, ed. Eckersley, R., 3-34. Collingwood, Victoria: CSIRO Publishing, 1998. p. 2.

[57] Ibid. p. 3.

> Policy debate needs to be linked to a wider cultural debate—a discussion of values, priorities and worldviews to provide a new framework within which the more detailed policy issues can be decided. The policy shifts necessary to achieve a high, equitable and sustainable quality of life will not occur in the absence of a deep cultural change.[58]

1.1.3 The Bhutanese GNH basic approach to education

The GNH approach to education is to ultimately develop a holistic education curriculum that could include teaching and learning what McMurtry calls "a more inclusively coherent understanding of human and natural phenomena."[59] This includes what we actually need to know to enhance social wellbeing, and whether knowledge is being effectively generated and used for the public good. This effective creation and use of knowledge for societal benefit requires both basic literacy and knowledge of multiple literacies in relevant areas such as ecology, civics, and multiculturalism.

A holistic GNH curriculum is concerned with the degree to which values are influenced by education and learning, which in turn is crucial to enhancing sustainability. For example, it ensures that knowledge is not generated and transmitted in such a way as to promote short-term personal gain, comfort, and advantage at the expense of future generations and long-term societal needs, so that the educational system promotes sustainability. GNH values require a broad view of wisdom and a suitable definition of what it means for a society to be wise, and the education system should be able to track changes in the values and wisdom of the populace over time.

Various existing education frameworks, each with its own rationale, are presented in this literature review. However, none of these existing frameworks is broad enough, in and of itself, to reflect the far-reaching GNH values and principles. Parts of these frameworks, and combinations of them, however, may be useful in designing a more comprehensive curriculum that will eventually be able to provide the Bhutanese with a system that will lead to a wise and knowledgeable Bhutanese populace. We will look at some of these frameworks in more detail below.

1.1.4 An educated populace

This report presents a review of the literature on potential education curricula in a wide range of disciplines. The exploration leads far from the standard Western education fields, which we discuss in the following sections: Part I, Chapter 2, and Part V. Because GNH values and principles include both wellbeing and the sustainable lifestyle patterns,

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[58] Ibid. p. 2.
[59] McMurtry, Professor of Philosophy, University of Guelph, personal communication.

in Part I, Chapter 3 we began with some broad questions concerning the definition of an educated populace, such as:

- What is an educated populace?
- What do we need to *know* in the twenty-first century to create a sustainable world for our children?
- What do we need to *know* to ensure wellbeing and a sustainable and good quality of life for all?
- What measures might indicate whether our society is becoming more knowledgeable, educated, and wise?
- How do we assess the *quality* of education, and not just the *quantity* of graduates?

Because of the importance of the values held by society to either increase or decrease efforts towards sustainability, this literature review focuses on the issues of learning wisdom and values in Part II. As well, we discuss corporate influences on education in more detail in Part III, which is concerned with environments within which learning and education take place. In Part III, which forms the first part of learning contexts, we also discuss nonformal learning, informal learning, participation in cultural activities as environments for informal learning, mental health influences on the learning environment, and the influence of the media on the public commons. Part IV (Document 2)*,* which forms a major part of the review, looks at views of knowledge needed for wellbeing and an educated populace, and Part V discusses selected, structural elements of the Western formal education system. Part VI of this review looks briefly at social outcomes of learning, which are important in a GNH education system.

1.2 Framework adopted for a potential educated populace assessment / curriculum

In order to select and develop an appropriate set of recommended curriculum and assessment elements for an educated Bhutanese populace, the research group developed a conceptual framework based on a sustainability and systems lens that fits GNH values and goals. In accord with the GNH view, the education or learning framework is seen to be inclusive, encompassing all aspects of lifelong learning from early childhood education, through K-12 primary and secondary school, through higher education, adult education, and learning for life. The framework also includes "lifewide" learning, from the formal education system to both work-related and personal-interest nonformal learning, to tacit and informal learning, in all its settings.

1.2.1 Main framework chart

The framework that emerged from this literature review may be seen in Figures 1–3. The main framework chart is circular with the individual components nested within each other, rather than formed by a vertical or horizontal relationship. This indicates that the learning processes and outcomes have a multi-causal and interdependent relationship, rather than a linear relationship based on overly simplistic cause and effect, or input-output models.

Basically, the wisdom and values of the populace, which represent both an outcome and a determinant of an educated populace, are centred within the larger, overarching context of ecological integrity and sustainability, which forms the outermost circle, and which reflects the goals of the United Nations Decade of Education for Sustainable Development. Between these two innermost and all-encompassing reference points are circles representing social outcomes, learning outcomes, and contextual elements of learning, which are further elaborated in a separate chart. In this framework, an "educated populace" is the ultimate outcome of the dissemination and development of knowledge and wisdom, which in turn is the most important goal and result of effective learning. The approach sees all of the circles within the framework interacting to produce an educated populace, which we define, describe, and discuss in some detail in Chapter 3.

Here we first present an outline of the recommended framework in graphic form and then briefly describe each component of the framework.

Figure 1. Framework for an educated Bhutanese populace
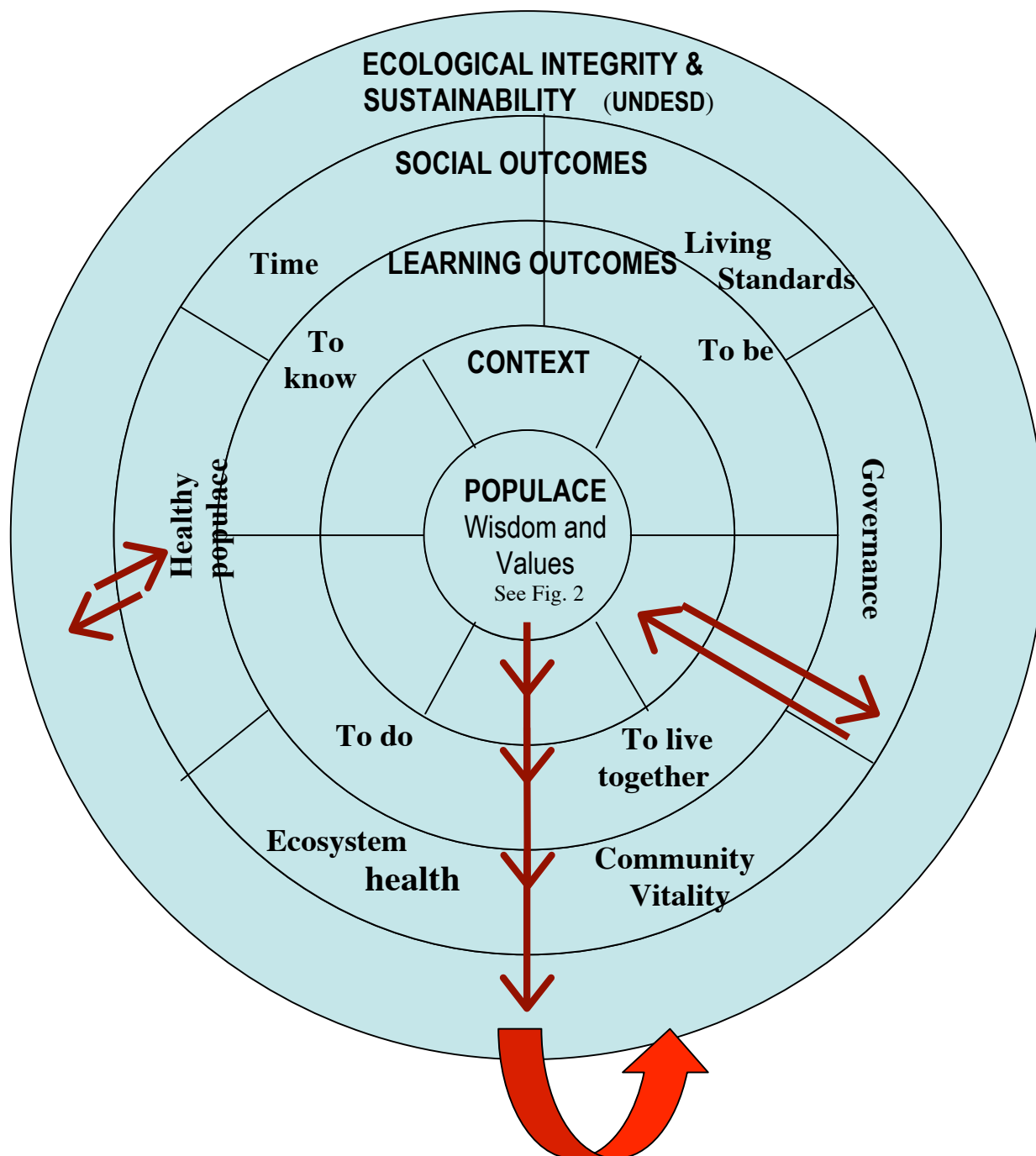
Figure 2. Values and attitudes of an educated populace

- anthropocentrism (human-centred) vs. ecological focus
- mechanistic vs. holistic focus
- individualism vs. collectivism
- materialistic vs. non-materialistic focus
- progress, change, innovation vs. sustainability, tradition
- source of knowledge: universal (dominant) vs. diverse sources

POPULACE

Values and Attitudes
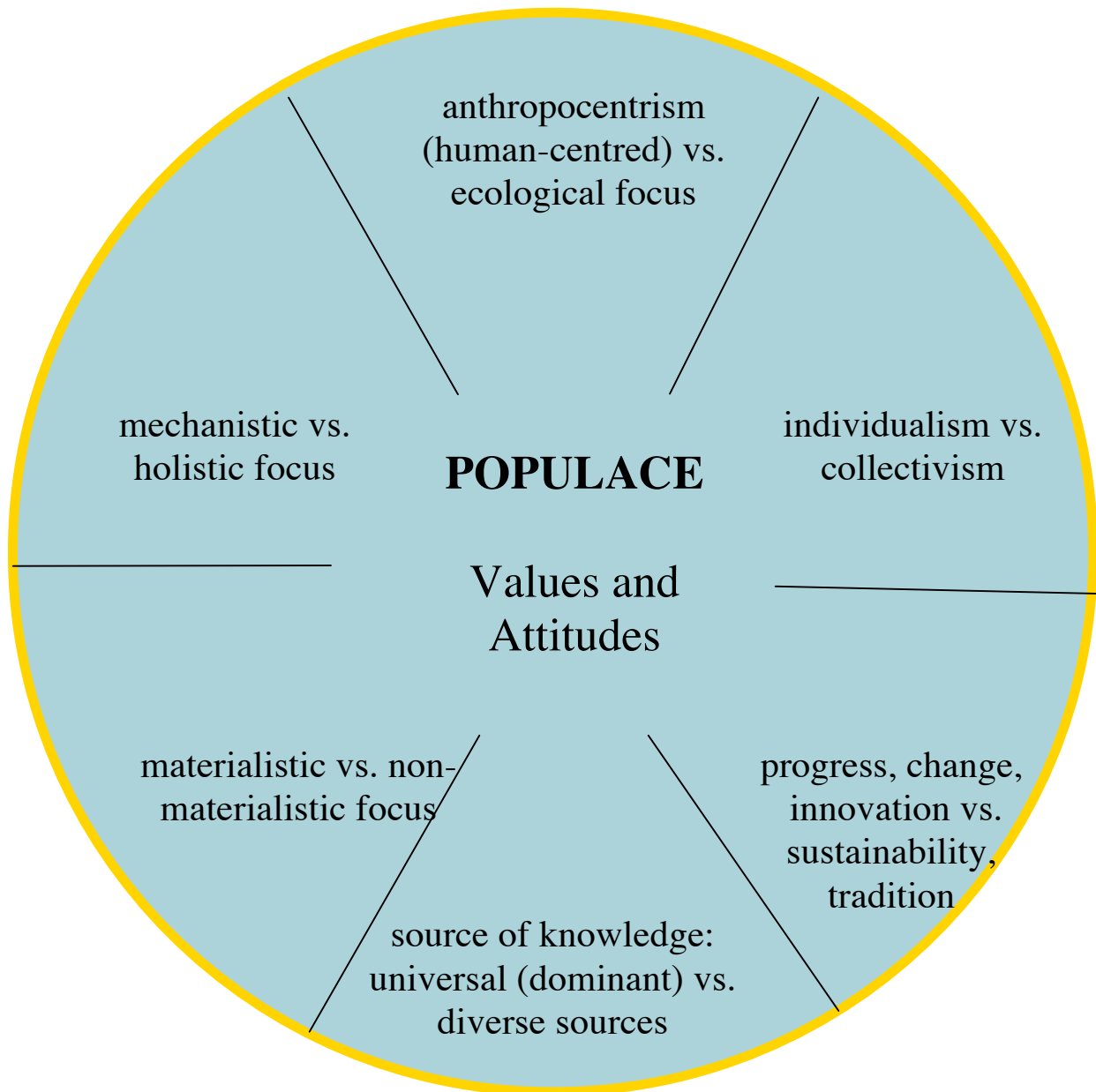
Figure 3. Context: Learning environments and structural elements
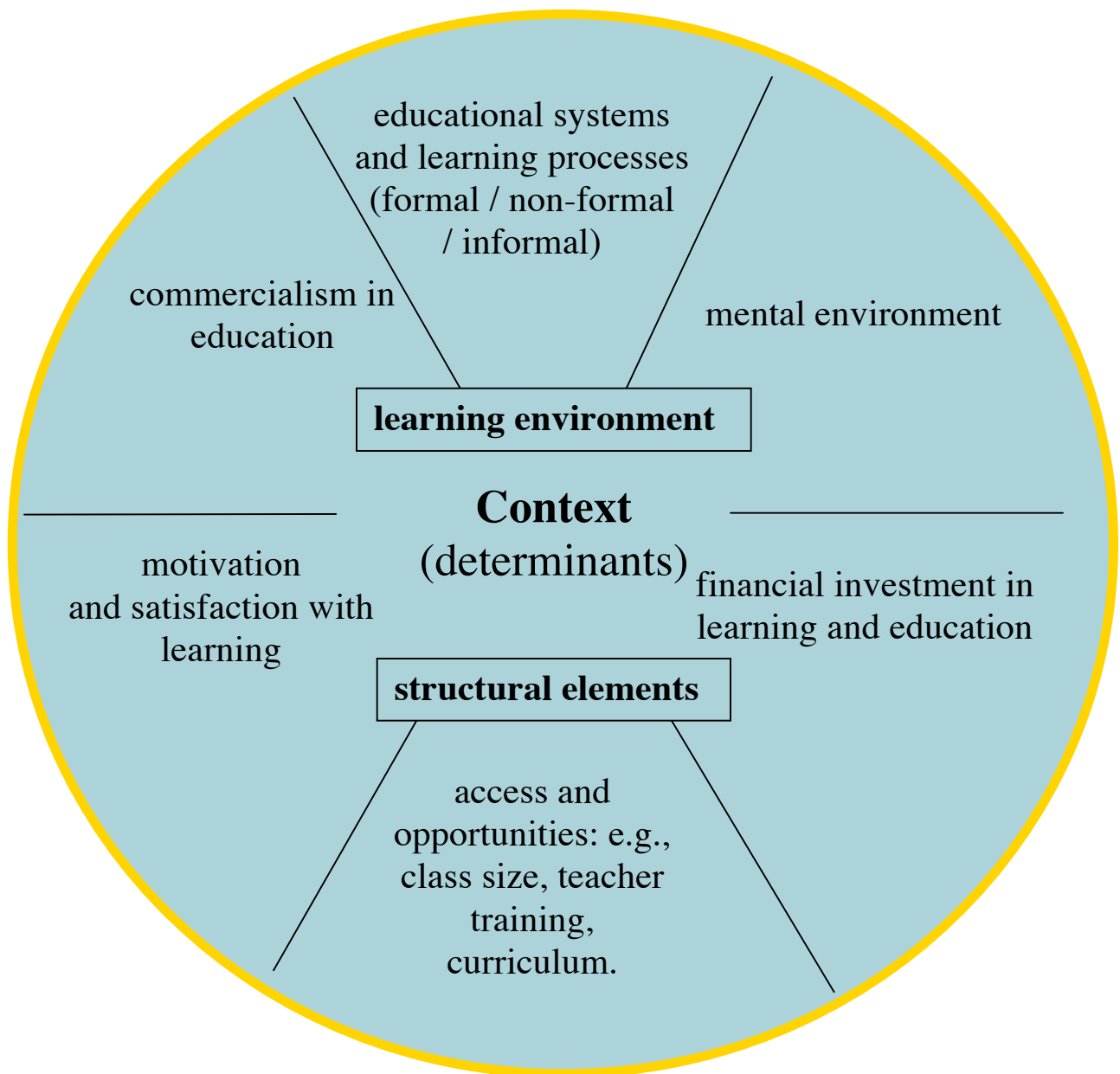
1.2.2 Ecological integrity and sustainability circle

The outer, all-encompassing circle in the framework chart, "Ecological integrity and sustainability," represents the overarching framework of the literature review, and of the GNH principles and values as a whole, through which all other components are evaluated. The key criterion for determining relevance in this review is therefore the concept of sustainability—the understanding that development must meet the needs of the present without imperilling the ability of future generations to meet their own needs. This is sometimes expressed as the need for human societies and economies to live off the interest generated by nature's capital without depleting or degrading the capital assets themselves.

Therefore, information concerning education that supports ecological integrity and sustainability is found throughout the review. Ideally, therefore, the learning processes and educational system should include an understanding of the dependence of human society on its encompassing ecosystem, and should teach behaviours that support ecosystem health and sustainability. Specific information about ecological literacy is reviewed in Part IV: Learning outcomes.

Basic sustainability lens

Scientists, policy makers, researchers, and the public at large are recognizing increasingly that our greatest challenge in the twenty-first century is to create and nurture sustainable societies—social, economic, cultural, and physical environments that can satisfy our needs, and enhance quality of life and wellbeing—without undermining the health of the planet and the wellbeing of future generations.[60]

Richard Eckersley cites the Organisation for Economic Co-operation and Development (OECD) High Level Advisory Group on the Environment, which predicts:

> Over the coming decades, economic growth will not be sustainable without serious attention to related environmental and social issues […]. The very global economic activities that degrade valuable ecosystems pose threats to human beings and thereby threaten economies and markets. The group urges the OECD not just to add 'sustainable development' to a list of important issues, but to make it an overarching strategic issue and a way of ordering and assessing all other issues.[61]

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[60] Capra. *Ecoliteracy: The Challenge for Education in the Next Century*, accessed.
[61] High Level Advisory Group on the Environment, World Resources Institute. *Guiding the Transition to Sustainable Development: A Critical Role for the OECD*, Organisation for Economic Co-operation and Development (OECD), 1997. p. 17, cited in Eckersley. "Perspectives on Progress: Economic Growth, Quality of Life and Ecological Sustainability." p. 3.

That recommendation, which is reflected in GNH values and principles, is the perspective adopted in this study, and explains why ecological integrity and sustainability are presented in the recommended framework for the educated populace domain as the outermost, encompassing circle in Figure 1.

Eckersley further notes:

> The two key aspects of life—quality and sustainability—are indivisible in that high quality of life obviously cannot remain high if it is not also sustainable. The term 'sustainable development' acknowledges this dynamic relationship between the goals of improving well-being and ensuring that improvements are compatible with a healthy natural environment. Sustainable development, although dismissed by some as an oxymoron, has become widely accepted in the past decade, in all parts of the world and across many cultures. It represents the most significant challenge to date to economic growth as the defining process of progress.[62]

Fritjof Capra, author, physicist, and Chair of the Board of Directors of the Center for Ecoliteracy, argues that the concept of sustainability has often been "distorted, co-opted, and even trivialized by being used without the ecological context that gives it its proper meaning."[63] He suggests:

> What is sustained in a sustainable community is not economic growth, development, market share, or competitive advantage, but the entire web of life on which our long-term survival depends. In other words, a sustainable community is designed in such a way that its ways of life, businesses, economy, physical structures, and technologies do not interfere with nature's inherent ability to sustain life.[64]

Fundamental to GNH values and principles, and in line with the analyses of Eckersley, Capra, the OECD High Level Advisory Group, and others, is the understanding that genuine progress must be based on the sustainability and wellbeing of both human society and the natural environment. In this literature review we also use a sustainability lens, which is a cross-cutting theme in the GNH pillars, to guide our approach to developing a new Bhutanese curriculum for an educated populace.

The notion of sustainability generates key principles and values that link the various elements of the framework. For example, learning that effectively teaches resource conservation and waste minimization will more likely generate social outcomes that support sustainability than the teaching and transmission of paradigms that ignore or undermine these principles. Thus, economics textbooks that perpetuate the illusion that

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[62] Eckersley. "Perspectives on Progress: Economic Growth, Quality of Life and Ecological Sustainability." p. 10.
[63] Capra. *Ecoliteracy: The Challenge for Education in the Next Century*, accessed.
[64] Ibid., accessed.

the economy is a closed box divorced from the resource flows that sustain it and independent of the impacts of its own waste flows into the environment, cannot be assessed as supporting sustainability in this framework. This architecture therefore clarifies interconnections and interactions among the indicators and allows for analysis across different geographical and temporal scales. It also integrates the interrelated areas of the economy, the environment, and society into a comprehensive framework that illuminates the interconnections influencing social outcomes.

A sustainability lens similar to that used by UNESCO to relate education to societal wellbeing and sustainable development therefore guided our research in this literature review. To this end, the UN is currently spearheading an initiative that focuses on societal learning with a view to promoting education for sustainable development. In December 2002, the United Nations General Assembly, recognizing the importance of sustainability to the future of humanity, adopted a resolution to declare the period from 2005 to 2014 as the United Nations Decade of Education for Sustainable Development (DESD).[65]

The basic vision of the DESD is "a world where everyone has the opportunity to benefit from education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation."[66] The UN recognizes that this type of learning happens not only in formal educational systems, but also through the informal and nonformal learning that takes place in all settings, including the home, community, and workplace, and throughout the life course from early childhood through adult life. Among other indicators of progress, UNESCO aims to evaluate the effective dissemination and adoption of values that are in accord with the goals of the DESD, and to assess changes in attitudes and behaviour reflecting those values.

Similar goals and objectives linking education and knowledge with sustainability have been formulated and expressed by recent U.S. and Canadian governments, and by other leading governmental and non-governmental agencies. For example, a U.S. government task force during the Clinton administration found that public education and outreach were needed to direct society towards a sustainable path. Indicators of change suggested by the task force included: whether the public is developing the attitudes and values that foster sustainable living, and whether the public understands the multidimensional concepts involved in sustainable development.[67]

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[65] For the full text of United Nations General Assembly Resolution 57 / 254, please see http://daccessdds.un.org/doc/UNDOC/GEN/N02/556/12/PDF/N0255612.pdf?OpenElement (Accessed 20 February, 2006).

[66] United Nations Educational Scientific and Cultural Organization (UNESCO). *Education for Sustainable Development: United Nations Decade (2005-2014)*, accessed.

[67] Public Linkage, Dialogue, and Education Task Force of the President's Council on Sustainable Development. *From Classroom to Community and Beyond: Educating for a Sustainable Future*, Washington, D.C., United States Government, 1997; accessed February 2004; available from http://clinton2.nara.gov/PCSD/Publications?TF_Reports/linkage-top.html.

The Government of Canada is also actively engaged, through an Environment Canada initiative, in developing education for sustainability, which it calls "Environmental Learning and Sustainability" (ELS). A recent Environment Canada report emphasized the importance of Canadians knowing and understanding the issues regarding sustainability and recommended that they learn to develop the skills, attitudes, and motivation to make informed choices.[68] ELS includes nonformal and informal education as well as education in the formal system. We explore these issues in more detail throughout the literature review.

These initiatives illustrate the vital linkages that are recognized to exist between education and sustainability, and the reality that education can be a binding theme relevant to all GNH pillars. These initiatives also show the importance of developing a new, comprehensive education curriculum that has the capacity to increase progress in these important initiatives. Because education is a vital, binding component of all aspects of wellbeing and sustainability, and possibly the key tool to promote "positive societal transformation," as UNESCO notes, the curriculum developed for the educated Bhutanese populace has the potential to contribute significantly to the coherence of the GNH values and principles as a whole.

It is important to add a note here concerning the very explicit reference to values in the discussion above, as, for example, in the statement that "UNESCO aims to evaluate the effective dissemination and adoption of values that are in accord with the goals of the DESD." As noted before, all measures of progress are normative by definition, since they must be based on values that allow assessment of progress towards a defined vision and set of goals. In other words, it is not possible to measure progress unless we know and can define "towards what" we want to see progress—namely a clear vision of what kind of Bhutan and what kind of world we want to see 20 or 50 years from now. Values are the societal leap that has been taken to define sustainability explicitly as a core GNH value. In this discussion, we are attempting to understand fully the implications of that choice and how it might inform the development of a new Bhutanese education curriculum.

Holistic model

As noted above, in order to develop a new education curriculum for an educated Bhutanese populace, we are recommending adoption of the general, basic framework outlined in Figure 1 that begins with including learning systems and processes in teaching and transmitting the GNH values and practices required to promote sustainability. That fundamental goal in turn requires enhancing what has been termed "ecoliteracy," which is generally defined as proficiency in multiple literacies. In this literature review, we

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[68] Environment Canada. *A Framework for Environmental Learning and Sustainability in Canada*, Government of Canada, 2002; accessed July 2004; available from http://www.ec.gc.ca/education/framework/framework_overview_e.htm.

examine work that is being developed in several of these literacies—including science literacy, ecological literacy, health literacy, and civic literacy. We explain both our general framework and this approach in more detail in the following section. Basically, an ecoliteracy approach requires a holistic perspective, which forms the conceptual foundation both for sustainability and wellbeing in the GNH pillars.[69]

By contrast, Western education and mainstream science generally use a "reductionist" model to organize learning. The reductionist model is concerned with reducing the whole to its parts in order to study and teach them more easily. This is the approach that has produced an intense focus on specialization in education and the professions, and that is often held responsible for the current Western "silo" approach to policy and decision-making.

Holistic and ecological education practitioners, however, take the view that the whole is more than a collection of its parts. Therefore, a holistic approach considers the entire spectrum of reality as a multidisciplinary and interconnected whole. A holistic perspective naturally leads us to focus more on learning and social outcomes than on the inputs, processes, and formal education outputs that may or may not influence these learning and social outcomes. For example, in terms of indicators, inputs like education financing and outputs like graduation rates tell us little about what youth know about their health and the health of their communities and environment—the kind of learning and social outcomes of interest from a holistic and GNH perspective. However, since the input-process-output model is most commonly used to frame the conventional Western education indicators in common use today, as we will see in Chapter 2, we do also look at these formal education factors in the second section on learning contexts in Part V.

As Capra notes, holistic models are influenced by "systems thinking," which emerged in the 1920s through the disciplines of biology, psychology, ecology, and quantum physics, among others.[70] These disciplines have further evolved in chaos and complexity theories. Systems thinking is thinking in terms of connectedness, context, and relationships. It basically looks at organisms as open living systems that are distinct, but that function as interconnected parts of a larger whole living system. The qualities of the whole cannot be seen in the sum of its parts, and, therefore, the system cannot be reduced to its parts and still remain alive.[71] The properties of the system are the properties of the dynamic whole. The food chain is often used as an example. All of the organisms within this system are interconnected by cyclical patterns of "energy flow" as the energy and matter move

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[69] Capra. *Ecoliteracy: The Challenge for Education in the Next Century*, accessed.

[70] Capra, Fritjof. *From the Parts to the Whole: Systems Thinking in Ecology and Education*, Center for Ecoliteracy, 1994; accessed August 2004; available from http://www.systemsthinkingpress.com/From_the_Parts_to_the_Whole.pdf.

[71] It is clear from this description that a systems model leans towards a "strong" definition of sustainability that requires maintenance of the full range of natural capital on the assumption that its parts are not substitutable. A reductionist approach, by contrast, more easily accepts that produced or intellectual capital can frequently substitute for elements of natural capital that are depleted or degraded—which is sometimes termed a "weak sustainability" approach.

within the system through webs or networks. These patterns would not be seen if one only studied one small part of this system.[72]

In a recent Schumacher lecture, Capra discusses the connections between ecological and human communities from a holistic, systems-thinking approach.[73] He argues that in order to become ecoliterate we need first to understand the principles of ecology, which are the patterns of life. He identifies these principles as: interdependence, diversity, partnership, energy flow, flexibility, cycles, co-evolution, and sustainability. In order to understand these principles, Capra points to specific examples of what we need to know in the ecological dimension, the knowledge of which in turn affects learning in the social and economic arenas. He identifies five key ecological principles that are important to know, and that can be scientifically and empirically demonstrated:

- an ecosystem generates no waste, one species' waste being another species' food;
- matter cycles continually through the web of life;
- the energy driving these ecological cycles flows from the sun;
- diversity assures resilience;
- life, from its beginning more than three billion years ago, did not take over the planet by combat but by cooperation, partnership, and networking.[74]

Capra sees these principles of ecology to be essentially the same as the principles of community, as well as the principles of education and of ancient wisdom, since all of these areas are living systems. In order to understand these living systems, he posits that we need to adopt a new way of thinking in order to create "meaningful knowledge" and to embody this knowledge in human communities. This thinking shifts our focus from the parts to the whole, from analysis of parts to context, from objects to relationships, from hierarchies to networks, and from structure to process and outcomes. In order to shift our thinking in this way, Capra suggests that an educated populace needs the skills

- to perceive patterns and connectedness;
- to put what one is observing into a larger context, rather than critically take it apart;
- to see relationships as primary, and objects as patterns that are inseparable webs of relationships;
- to shift perception of organizational structure from "top down" hierarchies to organizations of networks; and
- to see the movements of change as ongoing processes of cyclic activity rather than static structures.[75]

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[72] Capra. *From the Parts to the Whole: Systems Thinking in Ecology and Education*, accessed.
[73] Capra. *Ecoliteracy: The Challenge for Education in the Next Century*, accessed.
[74] Ibid., accessed.
[75] Capra. *From the Parts to the Whole: Systems Thinking in Ecology and Education*, accessed.

All of these skills apply to education and learning. In terms of the last skill in particular, learning is not the goal; rather, learning is the process of change. Change happens not by design and mandates, but by facilitating opportunities for changing processes to occur. For example, providing opportunities for lifelong learning and nourishing relationships by strengthening social networks and social cohesion can bring about positive learning outcomes that are constantly evolving. According to Capra, common properties and principles of organization are shared by all living systems. Therefore, these skills can be applied to all aspects of learning meaningful knowledge—from early childhood learning, to academic and artistic disciplines, to learning communities.

Capra's paradigm is very significant for the process of curriculum development in this field. For example, if general agreement can be obtained on the accuracy and significance of the five ecological principles that Capra enunciates above and that he claims are important for all people to know, then it will be possible as a next step to develop a curriculum designed to increase understanding of these key principles. Similarly, it will be possible to test for the five skills that Capra maintains an educated populace needs. A score out of ten on these five principles and five skills would then be one way to assess attainment and progress for the outermost sustainability and ecological integrity circle of the recommended educated populace framework in Figure 1.

We are still some distance from developing such a curriculum, let alone evaluating results for this aspect (the outermost circle) of the GNH educated populace curriculum. But it is important to take a long-term view of the curriculum development, and to use this present developmental work for the Bhutanese educated populace curriculum to recommend directions that will be fruitful to build new, meaningful, and relevant curricula in this area.

1.2.3 Populace circle: Wisdom and values

The innermost circle of the main framework in Figure 1, labelled "Populace: wisdom and values," represents the fundamental GNH wisdom and values of the populace, which are both an outcome and a determinate of an educated Bhutanese populace. Wisdom, generally, is considered as the "pinnacle of successful human development,"[76] but it is more than a utopian concept, and, as analysts have noted, can be achieved in everyday life.[77]

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[76] Ardelt, M. "Antecedents and Effects of Wisdom in Old Age: A Longitudinal Perspective on Aging Well," *Research on Aging*, vol. 22, no. 4, 2000: 360-394. p. 360, cited in Bassett, Caroline. "Wisdom in Three Acts: Using Transformative Learning to Teach for Wisdom." Paper presented at the Sixth International Transformative Learning Conference, Michigan State University, Oct. 6-9, 2005; accessed April 2006; available from http://www.wisdominst.org/WisdomInThreeActs.doc. p. 1.
[77] Baltes, Paul. *Wisdom as Orchestration of Mind in Virtue*, (Book in preparation), Max Planck Institute of Human Development, 2004; accessed April 2006; available from http://www.mpib-berlin.mpg.de/dok/full/baltes/orchestr/index.htm.

Educators such as Nicholas Maxwell, of the University of London, suggest that the basic aim of learning should be to cultivate wisdom in society rather than only to promote the acquisition of knowledge, since knowledge without the wisdom to use it beneficially can be extremely dangerous, as seen in its contributions to war and environmental damage.[78]

In his book, *Why Smart People Can Be So Stupid,* Robert Sternberg of Yale University points to a general lack of association between education and wisdom.[79] He notes that some of the most highly educated people have been responsible for global catastrophes. Many of the top-ranking Nazis, for example, had doctoral degrees; many highly paid and highly educated business executives have exploited the public when they put profit above the common good; many brilliant scientists have produced instruments of destruction; and many international terrorists are also highly educated. Unfortunately, examples of expert knowledge used in ways that are unaccompanied by wisdom are seen far too often in their contribution to social upheavals and environmental degradation.

There is a general consensus among researchers that wisdom is a lifelong process consisting of an amalgamation of knowledge and deep understanding. This understanding has been identified as including particular characteristics that are associated with wisdom—understanding that we are part of something larger than ourselves, compassion and respect for all life forms, action taken particularly toward enhancing the common good, and profound transformation, or increased integration, on both individual and societal levels.[80] In addition, the consensus among analysts of the subject is that although wisdom is natural, it needs to be carefully and assiduously cultivated throughout all areas of society.[81] Otherwise, as Bassett notes, "there is no fostering of wisdom—only the haphazard achievement of it by certain lucky or gifted individuals."[82]

If the cultivation and flourishing of wisdom is one bedrock of a GNH-educated populace, then the cultivation and flourishing of particular GNH values is the other. Values are further elaborated in Figure 2. Broadly accepted GNH values include equity, health, respect for the natural environment, strong and nurturing communities, security, multiculturalism, and compassion, among others. GNH prindiples also recognize that any curriculum and its measure of progress is based on the implicit question—"progress towards what?"—and is therefore normative by its very nature. The curriculum includes progress towards defined goals, and therefore inherently embodies the GNH vision and ideal towards which Bhutanese society aspires. In other words, it is necessary to base a Bhutanese education curriculum on a clearly defined sense of what it is that society wants to achieve, which in turn is based on basic GNH values.

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[78] Maxwell. *Do We Need an Academic Revolution*, accessed.

[79] Sternberg, Robert J., ed. *Why Smart People Can Be So Stupid*. New Haven, CT, Yale University Press, 2002.

[80] Bassett. "Wisdom in Three Acts: Using Transformative Learning to Teach for Wisdom."

[81] Sternberg, Robert J., ed. *Wisdom. Its Nature, Origins and Development*. Cambridge, Cambridge University Press, 1990.

[82] Bassett. "Wisdom in Three Acts: Using Transformative Learning to Teach for Wisdom." p. 3.

Values are moral or ethical convictions on which a population bases its sense of purpose, goals, or directions to guide its actions.[83] Michael Adams, in his recent book, *Fire and Ice: The United States, Canada and the Myth of Converging Values,* notes that values are "the basic *learned* motivators of human behaviour" (emphasis added).[84] Essentially, values can help discriminate between what is beneficial and what is detrimental to society. Values are also referred to in the literature as attitudes, beliefs, convictions, principles, or virtues.

According to Lourdes Quisumbing, President of the United Nations Educational, Scientific, and Cultural Organization—Asia-Pacific Network for International Education and Values Education (UNESCO-APNIEVE), values are an integral component of basic education and are needed for an individual "to survive, to live and work in dignity, and to continue learning."[85] She identifies the values needed for personal and social transformation as peace, human rights, dignity, democracy, tolerance, justice, co-operation, and sustainable development. Quisumbing suggests:

> Even if not explicitly stated, or perhaps not even consciously intended, values and attitudes underlie the criteria and indicators in assessing all the areas of educational goals and objectives […]. It is only when we have the power to value that we will be able to distinguish the essential from the nonessential, and to realize that the dignity of the human person and the excellence of the human spirit are the ultimate criteria of quality.[86]

Educator and author C.A. Bowers, suggests that the cultural habits currently taught in Western education systems contradict the value of sustainability.[87] He argues that there are three main cultural images or root metaphors taught in Western schools that promote destructive practices and are harmful to sustainability. These cultural images include: individuality, or a view that sees the individual as the basic social unit without regard to the interdependent nature of reality; an anthropocentric view of the world that sees humans as "the focus of all knowledge, creativity, and intelligence, [which] negates the importance of culture, tradition and ecology"; and a view that change is inherently progressive and good, which "denies the importance of traditional ways of knowing, including Indigenous knowledge and rituals."[88] We will examine these three values and others in more detail in Part II.

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[83] Heylighen. "What Is a World View?"
[84] Adams. *Fire and Ice: The United States, Canada and the Myth of Converging Values.*
[85] Quisumbing. *The Values /Attitudinal Dimension in Quality Education*, accessed.
[86] Ibid., accessed.
[87] Bowers, C. A. *The Culture of Denial*, Albany, N.Y.: The State University of New York Press, 1997. cited in Fain, Stephen M., Martha Barantovick, and Raquel Martin. "The Aims of Education in an Age of Stasis and Change," in *Encyclopedia of Social Sciences and Humanities: Education for Sustainability in Encyclopedia of Life Support Systems (EOLSS)*, ed. Farrell, Robert V. and George Papagiannis. Oxford, U.K.: Developed under the Auspices of the UNESCO, EOLSS Publishers, 2004, accessed June 2005; available from http://www.eolss.net/eolss_samplechapters_C04.aspx. p. 9.
[88] Ibid.

Canadian governments and educators do stress moral or value education in curriculum goals. For example, *The Atlantic Canada Framework for Essential Graduation Learnings in Schools,* which was produced following public consultations, describes skills and attitudes that all students are expected to demonstrate prior to graduation.[89] Attitudes related to values in this framework include the abilities:

- to understand sustainable development and its implications for the environment;
- to examine human rights issues and recognize forms of discrimination;
- to determine principles and actions of just, pluralistic and democratic societies;
- to reflect critically on ethical issues; and
- to understand their own and others' cultural heritage, cultural identity and the contribution of multiculturalism to society.

The key question is whether these educational institutions and curricula fulfill these stated goals. Unfortunately, few conventional indicators of educational attainment even ask this question, or attempt to relate what they do report to such fundamental statements of educational purpose, shared values, and desired societal outcomes. Qualitative measures, such as assessments of the capacity and success of educational systems to reflect specified values and achieved desired stated societal outcomes, are usually absent from current, conventional education indicator systems.

1.2.4 Context 1: Learning environments circle

Moving from the inside out, the contextual elements of learning form the next circle in the framework chart in Figure 1, and are further elaborated in Figure 3. These contextual factors are divided into two parts. The first part, discussed in Part III of this literature review, includes elements such as the physical and mental environments within which learning takes place. In part, this section specifically looks at the contexts of lifelong and lifewide learning, including nonformal and informal learning; the influences of commercialization on education; participation in cultural activities as a reflection of informal learning environments; and the influence of the mental environment (mass media, advertising, etc.) on learning.

1.2.5 Context 2: Structural elements circle

The second part of the contextual circle is discussed in Part V of the literature review. Basically this includes structural elements of the formal education system such as financial investment in education, access to education, and opportunities for learning. In conventional Western education indicator frameworks, these structural elements

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[89] Atlantic Provinces Education Foundation (APEF). *The Atlantic Canada Framework for Essential Graduation Learnings in Schools*, accessed.

generally are represented by input, process, and output indicators such as financing (input), class size (process), and graduation rates (output).

In Part V, therefore, we look at the second section of the context circle, which also influences the outcome of an educated populace in significant ways. These contexts include structural elements within the formal education system, such as early childhood education, student achievement, and access and barriers to education. In addition, higher education, the role of the university, and research and development within the university are discussed. This section also includes curriculum elements in the areas of arts education, and approaches to holistic and transformative learning. Other discussions of curriculum elements within the formal education system are included within the sections concerned with the specific literacies.

The impact of these factors on educated populace outcomes is obvious. If, for example, access to higher education is denied to bright students for financial reasons; if the quality of classroom instruction is poor; if curricula are irrelevant or outdated, then the populace will likely not be as educated, knowledgeable, or wise as it could be if these structural elements were more favourable.

1.2.6 Learning outcomes

The "learning outcomes" circle represents what an educated populace potentially needs to know to create healthy and sustainable societies within a healthy ecosystem. This view of successful learning outcomes, which is explored in Part IV of the review, vastly expands the conventional use of the term "literacy" to encompass a much broader spectrum of knowledge. In keeping with the sustainability lens described above, sustainability here also forms the conceptual foundation for what is sometimes referred to as "ecoliteracy." Ecologist David Orr suggests that in order to meet the challenge of sustainability, society needs to be ecoliterate.[90] Ecoliteracy goes beyond environmental or ecological literacy alone and includes a broad range of literacies or knowledge needed to foster wellbeing in a sustainable world. It includes (of course) knowing how to read, write, and count, but it also includes adequate knowledge of health, science, ecology, civics, and other aspects of human interaction with the larger world.[91, 92]

From this perspective, knowledge and learning are first steps towards actions and social outcomes that support and enhance wellbeing and sustainability. In Part IV of this literature review, we explore the growing need to be ecoliterate in these and multiple other literacy areas. Indeed, because of the importance of learning outcomes in these multi-literacies, Part IV has become a central focus of the framework of this review, and

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[90] Orr, David. W. *Ecological Literacy. Education and the Transition to a Postmodern World*, Albany: State University of New York Press, 1992.
[91] Ibid.
[92] Capra. *Ecoliteracy: The Challenge for Education in the Next Century*, accessed.

it demonstrates clearly the need for a new Bhutanese education curriculum that includes literacy in these various knowledge areas.

Taking a long-term view, and assuming that the development of the Bhutanese education curriculum is a multi-year task aimed at providing the best possible education to the Bhutanese populace, then the ultimate goal for this educated populace curriculum must be the development of all the dimensions of the framework recommended in Figure 1. However, in the short term, if we are to recommend one particular aspect of that framework for immediate curriculum development, it would be the learning outcome circle and its multiple literacies, which are crucial for students to learn in order to apply GNH values and principles in their daily lives.

This literature review explores social outcomes and contextual elements, as noted. However, for the reasons stated, the document focuses primarily on learning outcomes, broadly defined as an expanded view of "literacy" that encompasses what we need to know about societal wellbeing. These literacies include the following areas: basic adult literacy, ecology, Indigenous knowledge, science, health, food, nutrition, civics, multiculturalism, media, statistics, and art. The list is not exhaustive, but is recommended here as an adequate and useful approach, which can at least begin to assess what the Bhutanese and all people need to know to enhance wellbeing and sustainability. The available evidence indicates that reasonable competence in the different literacies listed here will at least provide Bhutanese with the tools they need to live well and to leave a decent future for their children.

Each of the literacy domains listed in the previous paragraph has its own literature, concepts, views, pratitioner agreements and disagreements, frameworks, evaluation and assessment methods, and, in some cases, indicators. However, the domains clearly overlap, and information highlighted in one area may also be found throughout the review in other areas as well. In addition, we discuss the particular role of primary, secondary, and higher education in fostering these literacies in several sections. As well, materials on the particular relationship between education and the economy is distributed throughout the literature review, as the economic dimension of knowledge is seen to be a cross-cutting theme in several literacy domains.

1.2.7 Social outcomes circle

GNH wellbeing values include the welfare of future generations of Bhutanese as well as that of the present generation, and recognize the importance of certain key conditions— physical and mental health, decent living standards, a healthy physical environment, strong and safe communities, vibrant culture, good government, and the ability to balance the often competing demands of paid and unpaid work with ample free time. We briefly look at these conditions in Part VI of this review in so far as they represent the desired

social outcomes that can presumably be nurtured and enhanced by a truly educated populace.

As noted, the inter-generational dimension is intrinsic to GNH values in the recognition that present wellbeing is enhanced if Bhutanese have confidence in their children's future. This dimension would be diminished if the Bhutanese populace feels anxious that their children's health, living standards, environment, culture, and communities are imperilled. From that perspective, an educated populace is one that has the requisite knowledge to strengthen these various conditions of wellbeing in the long term, and thereby enhance both its own opportunities for wellbeing and those of its children. Creating and nurturing healthy and sustainable societies—based on healthy social, economic, cultural, and physical environments—requires knowledge and the wisdom to use this knowledge to act for the benefit of the common good.

Since this literature review is mainly concerned with curriculum development, it has not emphasized social outcomes (the second outermost circle in Figure 1), which are expected to result from the curriculum. However, to complete the framework we are using, and for illustrative purposes (rather than as a comprehensive analysis), we have included brief summaries of some of the key links between education and ecological integrity, healthy populations, living standards (here focused on work), and community vitality (here focused on crime). In addition, we have also included a brief section on the educational attainment of the working age population, since this is the variable used most often in studies that identify correlations between education and other social and economic factors.

1.3 Main frameworks that have influenced the GNH educated populace framework

In the initial stages of developing a framework for the GNH education assessment and curriculum for an educated Bhutanese populace, we drew on a number of sources including UNESCO and the Centre for Ecoliteracy. Among the many potential frameworks for education curricula presented and discussed in this literature review, four are identified here as informing an appropriate basis for a GNH education framework for an educated Bhutanese populace.

The four sources identified as main influences for the GNH educated populace framework are:

1. Educational values for an ecologically sustainable future, as defined by C.A. Bowers
2. The Delors report (UNESCO), which includes four aspects: learning to be, learning to live together, learning to know, and learning to do
3. The Centre for Ecoliteracy framework that matches the four-part Delors framework
4. The United Nations Decade of Education for Sustainable Development

1.3.1 Educational value-basis of an ecologically sustainable future

Education can promote or undermine wellbeing, depending on what is taught and how it is taught. In fact, ecologically destructive forms of culture are being promoted through educational systems on a worldwide basis. Like any other societal structure, educational systems can be based on potentially misguided underlying assumptions or worldviews. Thus, more education, or an increase in the number of graduates, does not necessarily translate into an improvement in societal outcomes or wellbeing. To assess the latter, the content of education and method of instruction must be analyzed.

C. A. Bowers, a leading scholar in this area, has written about the learned assumptions that currently inform and reinforce environmentally destructive practices. He argues that we need to understand the cultural characteristics of ecologically sustainable cultures and the underlying "cultural assumptions that make a material form of progress—rather than ecological sustainability—the primary goal."[93]

Bowers writes that we need to consider the "knowledge systems at the root of the ecological crisis, as well as the traditions of intergenerational knowledge that represent alternatives to a consumer-dependent lifestyle."[94] According to Bowers the current habit

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[93] Bowers, C. A. *Mindful Conservatism: Rethinking the Ideological and Educational Basis of an Ecological Sustainable Future*, New York: Rowman & Littlefield Publishers, Inc., 2003. p. 160
[94] Ibid. p. 165

of including environmental issues in courses or environmental courses in standard curricula will "do little good if the underlying cultural, taken-for-granted interpretative framework is not changed."[95] He writes:

> One way to ensure that the changes go beyond the superficial level of changing the rhetoric—while continuing to reinforce the interpretive frameworks that support the continuation of the colonizing and environmentally destructive practices—is to begin the task of organizing knowledge in terms of a different set of deep cultural assumptions.[96]

As noted above, Bowers argues that there are three main assumptions or cultural practices and patterns of thinking that are taught in schools that are unsustainable and are responsible for ecological destruction. These cultural assumptions or values include:

- **Individuality**—or a view that sees the individual as the basic social unit without regard to the interdependent nature of reality. According to Bowers, the view of the importance of the "autonomous individual" undermines "cultural self-sufficiency" and "networks of mutual support that represent alternatives to today's growing reliance on the market."[97]

- **Anthropocentrism**—an anthropocentric view of the world that sees humans as "the focus of all knowledge, creativity, and intelligence, [which] negates the importance of culture, tradition and ecology." This current anthropocentric pattern of thinking about the natural environment "casts the environment as an economic resource or as a totally irrelevant factor when thinking about educational reform."[98]

- **Current view of progress**—a view that sees change as inherently progressive and good, which "denies the importance of traditional ways of knowing, including indigenous knowledge and rituals."[99] Bowers notes that "the keystone holding this symbolic structure together is the assumption that constant cultural changes are the expression of a linear form of progress. Indeed, this framework leads to equating the rate of change with the rate of progress and thus the drive to increase the rate of change through technological innovations."[100]

Bowers notes that we need a new way of thinking about wealth (to equate it with the quality of relationships or one's participation in community-centred activities that reinforce reciprocal relationships, for instance). He writes: "[E]ducational reforms that

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[95] Ibid. p. 165
[96] Ibid. p. 166
[97] Ibid. p. 149
[98] Ibid. p. 156
[99] Ibid.
[100] Bowers. *Mindful Conservatism: Rethinking the Ideological and Educational Basis of an Ecological Sustainable Future*. p. 139

focus on reducing the level of consumption require a radical shift in how we understand the nature of wealth, which is now largely equated with the ownership and display of material goods."[101]

The alternatives to these adverse views that currently permeate conventional educational systems have helped inform the GNH framework for an educated populace curriculum.

1.3.2 UNESCO Delors Report: Learning: The Treasure Within. Report to UNESCO of the International Commission on Education for the Twenty-First Century

Jacques Delors headed the UNESCO Task Force on Learning in the 1990s. The Task Force was established to study the challenges facing education and to prepare recommendations for the kind of education necessary:

> In confronting the many challenges that the future holds in store, humankind sees in education an indispensable asset in its attempt to attain the ideals of peace, freedom and social justice. [… Education is] one of the principle means available to foster a deeper and more harmonious form of human development and thereby to reduce poverty, exclusion, ignorance, oppression and war.[102]

The Delors Report recommends that education be organized around four pillars of learning:

Learning to be: This refers to development of the whole person and tapping the talents and abilities of individuals, including memory, reasoning power, imagination, physical ability, aesthetic sense, the aptitude to communicate with others, and natural charisma. Delors suggests that in the twenty-first century, "everyone will need to exercise greater independence and judgement combined with a stronger sense of personal responsibility for the attainment of common goals."[103]

Learning to live together: This pillar involves developing an appreciation and understanding of other people and other cultures, and being respectful of differences and welcoming diversity. "By developing an understanding of others and their history, traditions and spiritual values and, on this basis, creating a new spirit which, guided by recognition of our growing interdependence and a common analysis of the risks and challenges of the future, would induce people to implement common projects or to manage the inevitable conflicts in an intelligent and peaceful way."[104] Delors notes that the UNESCO Task Force put greatest emphasis on this pillar.

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[101] Ibid. pp. 161–162
[102] Delors. *Learning: The Treasure Within. Report to UNESCO of the International Commission on Education for the Twenty-First Century*. p. 13
[103] Ibid. p. 21
[104] Ibid. p. 20

Learning to know: According to Delors, this pillar is more concerned with mastery of learning tools than with acquisition of structured knowledge. The report notes that given "the rapid changes brought about by scientific progress and the new forms of economic and social activity, the emphasis has to be on combining sufficiently broad general education with the possibility of in-depth work on a selected number of subjects."[105]

Learning to do: This pillar deals with the acquisition of skills and being able to put them into practice in a variety of situations. This ability is more easily acquired if the opportunity to work or develop skills and abilities is available while still in education.[106]

These four pillars of learning have been incorporated into recommended basic GNH education curriculum framework, mainly since the pillars are broad and also provide a link to GND values and principles. For example, as seen in the framework chart (Figure 1), we have divided the "learning outcomes" section into the four Delors pillars, on the assumption that multicultural literacy can properly be included in the "learning to live together" pillar, civic literacy in the "learning to do" pillar, etc. While these distinctions and categorizations seem reasonable, there is clearly overlap between the pillars. For example, all of the literacies in the learning outcomes section could also be effectively placed in the "learning to know" section.

Also, in many respects, it must be recognized that the Delors Report embodies many of the adverse assumptions Bowers outlines above, including assumptions about anthropocentrism and progress. These assumptions are evident in the way Delors writes about the role of education in meeting the needs of a "rapidly changing world," and the "transition to a knowledge-driven society."[107] In other words, there is an underlying message in the Delors Report that economic growth and globalization are both inevitable and desirable, and that education can help people adapt to, prepare for, and benefit from these changes.

As Bowers notes, these underlying assumptions are questionable at best, and may well lead to the unsustainable actions that are responsible for much of the ecological destruction we witness today. For this reason, the Delors report by itself does not provide a sufficient basis for our recommended GNH educated populace curriculum framework and must be combined both with Bowers' critique above, and with the four parallel aspects of a holistic education from the Center for Ecoliteracy, described below. In other words, how one uses Delors' four pillars depends entirely on how one defines and contextualizes Delors' four pillars. In principle, the four pillars are sufficiently broad to include the ecological view enunciated by Bowers and by other educators like David Orr, as described in this literature review.

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[105] Ibid. p. 21
[106] Ibid. p. 21
[107] Ibid. p. 18, 20

1.3.3 The Centre for Ecoliteracy

The Center for Ecoliteracy lists the competencies, skills, values, and visions that are needed to put knowledge and wisdom into practice. This holistic framework is expressed in terms of four metaphors, which coincide very well with Delors' four pillars of learning: spirit, heart, head, and hands.

Spirit (learning to be): a sense of wonder; a capacity for reverence; a deep appreciation of place; a feeling of kinship with the natural world, and the ability to invoke that feeling in others.[108]

Heart (learning to live together): a deeply felt, not just understood, concern for the well-being of the Earth and of all living things; empathy and the ability to see from and appreciate multiple perspectives; a commitment to equity, justice, inclusivity, and respect for all people; skills in building, governing, and sustaining communities.

Head (learning to know): ecological knowledge; the ability to think systemically; the ability to think critically, to solve problems creatively, and to apply environmental ethics to new situations; the ability to assess the impact of human technologies and actions and to envision the long-term consequences of decisions.

Hands (learning to do): the ability to apply ecological knowledge to the practice of ecological design; practical skills to create and use tools, objects, and procedures required by sustainable communities; the ability to assess and make adjustments to uses of energy and resources; the capacity to convert convictions into practical and effective action.

Combining these four definitions and parallel aspects of a holistic education with Delors' four pillars broadens and gives a deeper meaning to Delors' interpretation of the four pillars. Thus, they might form a potentially suitable basis for the GNH educated populace curriculum in the future. In fact, if in the future we develop the full set of curricula elements for the entire conceptual framework, rather than focusing at the present time on learning outcomes, Delors may possibly be more applicable and we will apply it again at that time. However, for the above reasons, it does not work well with the literacy outcome focus.

1.3.4 United Nations Decade of Education for Sustainable Development (DESD)

The U.N. is currently leading an ambitious initiative that focuses on the broad process of societal learning as education for sustainable development. In December 2002, the U.N. General Assembly, recognizing the importance of sustainability to the future of humanity, adopted a resolution to declare the period from 2005–2014 as the United Nations Decade

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[108] Center for Ecoliteracy. *Competencies*, Center for Ecoliteracy, 2005; accessed February 2005; available from http://www.ecoliteracy.org/education/competencies.html.

of Education for Sustainable Development (DESD). The basic vision of the DESD is "a world where everyone has the opportunity to benefit from quality education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation."[109]

Furthermore:

> [T]here can be no long-term economic or social development on a depleted planet. Education to develop the widespread understanding of the interdependence and fragility of planetary life support systems, and the natural resource base upon which human well-being depends, lies at the core of education for sustainable development.[110]

Essentially, the DESD is about values and respecting others (present and future generations), respecting cultural diversity, and respecting the planet. According to the DESD, learning for a sustainable future is about learning to:

- Respect, value and preserve the achievements of the past;
- Appreciate the wonders of the peoples of the earth;
- Live in a world where all people have sufficient food for a healthy and productive life;
- Assess, care for, and restore the state of our planet;
- Create and enjoy a better, safer, more just world;
- Be caring citizens who exercise their rights and responsibilities locally, nationally, and globally. [111]

These six objectives can also contribute to a GNH curriculum framework for an educated Bhutanese populace by defining and specifying the desired societal outcomes of effective education. The first three suggest bases for a curriculum framework for the educated populace and deal with learning processes and structures (Bowers, and Delors combined with the Center for Ecoliteracy Framework). The fourth source for our recommended framework (the DESD) defines and specifies the outcomes expected from the educational processes and structures.

According to the DESD, the key themes in education for sustainable development include:

- Overcoming poverty
- Gender equality

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[109] Fain, Barantovick, and Martin. "The Aims of Education in an Age of Stasis and Change."

[110] Combes, Bernard P.Y. "The United Nations Decade of Education for Sustainable Development (2005-2014): Learning to Live Together Sustainably," *Applied Environmental Education and Communication*, vol. 4, 2005: 215-219.

[111] Ibid.

- Health promotion
- Environmental conservation and protection
- Rural transformation
- Human rights
- Intercultural understanding and peace
- Sustainable production and consumption
- Cultural diversity
- Information and communication technologies

Many of these themes can be included as part of the desired broad societal outcomes in a GNH-based educted populace curriculum / assessment framework.

The UN recognizes that the type of learning required to achieve these societal outcomes is not restricted to formal education systems, but occurs in informal and nontraditional learning that takes place in all settings, including the home, in social settings, in community, and in the workplace, and throughout the course of ones life, from early childhood through adult life.

Education for sustainable development (ESD) should not be confused with environmental education, which is a discreet subject and well-established discipline. Instead, ESD includes environmental education but sets it in the "broader context of socio-cultural factors and the socio-political issues of equity, poverty, democracy, and quality of life."[112]

Interestingly, the DESD also draws on the Delors Report and the four "pillars" or fundamental types of learning: learning to be, learning to live together, learning to know, and learning to do. The addition of a fifth pillar has been suggested: learning to transform oneself and society "so as to develop respect for the environment, for social solidarity, and for a nondiscriminatory, gender-sensitive world. This reflects a synergy of cognitive, practical, personal, and social skills to bring about sustainability."[113]

Essentially, the DESD asserts that all dimensions of society (environment, economy, and culture) must be developed sustainably to ensure present and future wellbeing. The sustainability lens—evident in the UNESCO initiative—as noted, has also guided our research and the development of a GNH curriculum framework. We discuss the DESD in more detail in Chapter 17: Ecological literacy.

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[112] Fain, Barantovick, and Martin. "The Aims of Education in an Age of Stasis and Change."

[113] According to Combes, the addition of the fifth pillar was suggested by a number of Latin American educators and by UNICEF during its own analytical process of reviewing the recommendations of the Delors Report. Ibid, p. 216.

1.4 Other frameworks that have influenced the GNH educated populace assessment / curriculum framework

In addition to the main influences on the GNH educated populace assessment / curriculum framework described above, we found other frameworks especially useful. Six of these frameworks are described below.

1.4.1 System-based framework of the Balaton Group

Classifications that use a system-based framework incorporate ecological, social, and economic components, and tend to organize the system according to these broad domains. In fact, in the first draft of this literature review, we also organized the material according to environmental, social, and economic domains. The focus of such structures tends to be on the outcomes or impacts of systems rather than on the inputs and outputs, such as graduation rates or numbers of patents, which are commonly used in conventional Western educational and economic indicator systems. System-based frameworks also tend to have a structure that is based on networks rather than hierarchies, and they are generally defined by principles or values that link the various elements of the framework.

The systems architecture clarifies interconnections and interactions among the various elements comprising the system and allows for analysis across different geographical and temporal scales. For example, system-based frameworks are designed to demonstrate linkages between factors like curriculum content, learning structures, and the knowledge required to enhance social wellbeing. In an indicator system, the indicators can be structure or stock indicators, or process or functional indicators. In a simple example of population systems, structure indicators might include density, age, class, and sex ratios, and process indicators might include reproduction, mortality, and immigration/ emigration rates.[114]

The Balaton Group has developed a framework using a cross-disciplinary systems thinking approach. Founded in 1981, this group is an international network of scholars and activists who are working on sustainable development in their own countries. They are especially interested in indications of sustainable development across scales in local, national, and international contexts. The late Donella Meadows reported results from a 1996 Balaton Group workshop,which was interested in creating a holistic information system to organize and contextualize the information.[115] They were also working on ideas

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[114] Seventh American Forest Congress Communities Committee. *Forest Sustainability Indicator Tools for Communities*, Seventh American Forest Congress Communities Committee, 2003; accessed January 2005; available from http://www.communitiescommittee.org/fsitool/AppendixB.pdf.

[115] Meadows, Donella. *Indicators and Information Systems for Sustainable Development. A Report to the Balaton Group*, Hartland Four Corners, VT, The Sustainability Institute, 1998; accessed July 2004; available from http://www.nssd.net/pdf/Donella.pdf.

for process, linkage, and worldview explications that could aid the development of alternate indicators.

In their search for an encompassing framework the group considered, among others, the "pressure-state-impact-response" model used by the UN Commission on Sustainable Development, the "ecological footprint" developed by William Rees and Mathis Wackernagel of the University of British Columbia, the idea of "genuine savings" from the World Bank, and the "four capitals" approach (economic, natural, human, and social capital). Although they found these systems useful, they did not find them to be sufficiently comprehensive. In the end, the group decided to work with a simple framework developed by Herman Daly now known as the "Daly triangle," which uses the four capitals in an integrated way. This is illustrated in Figure 4 below.

Figure 4. The Daly triangle

Ultimate ends — wellbeing:
Happiness, harmony
identity, fulfillment,
self respect,
self-realization, community,
transcendence, enlightenment

Values and ethics

Intermediate ends — human capital and social capital:
health, wealth, leisure, mobility,
knowledge, communication, consumer
goods

political economy

Intermediate means — built capital and human capital:
labour, tools, factories,
processed raw materials

science and technology

Ultimate means — natural capital:
solar energy, the biosphere,
earth materials,
the biogeochemical cycles

Source: Meadows, Donella. *Indicators and Information Systems for Sustainable Development. A Report to the Balaton Group*. The Sustainability Institute, 1998.

The "hierarchy" network of this model consists of four levels, which were originally drawn as a triangle. However, the triangle shape, as the group stresses, is not important to the logic. The base of the triangle represents natural capital, which Daly identifies as the **ultimate means** out of which all life and all economic transactions are built and sustained.

The next level, the **intermediate means**, represents built or economic capital, which is the mechanical and processed infrastructure of tools, machines, factories, skilled labour, and other inputs to the economy. It draws from nature and serves higher goals.

The next level, **intermediate ends**, includes public knowledge, health, wealth, leisure, mobility, communication, and consumer goods. These are goals of most economies, and most systems stop there.

The Daly triangle, however, includes a fourth level, **ultimate ends**, which questions the purpose of education, health, and wealth. This quality of life level is based on values and includes, happiness, harmony, identity, fulfillment, self-respect, self-realization, community, transcendence, and enlightenment. These are issues of quality and are difficult to measure. Meadows notes that merely asking people is not always reliable since most people would like to be seen as happy or satisfied.

As well, the layers need to be balanced and integrated. For example, Meadows explains:

> The three most basic aggregate measures of sustainable development are the sufficiency with which ultimate ends are realized for all people, the efficiency with which ultimate means are translated into ultimate ends, and the sustainability of use of ultimate means. It is conceivable that health, education, happiness, and harmony could increase, even if the mobilization of energy, materials, capital, and labor decreased. That would obviously be a step in the direction of sustainable development. In fact, it would be a primary goal of a sustainable society to produce the greatest possible ends with the least possible means.

> If there is wisdom about ultimate ends but no technology for tapping ultimate means, the wisdom will rest on a foundation of physical scarcity. If there is technical proficiency supplying an abundance of intermediate means, but unjust politics and distorted economics, there will be plentiful capital, labor, and energy but poorly distributed health, education, and wealth. Powerful technologies and an efficient, equitable economy may make a society rich in intermediate ends, but if that society is spiritually barren, its abundance will not bring fulfillment. If technologies are destructive of the ultimate means, the entire structure will crumble at its foundation, regardless of the excellence of its upper levels.[116]

Here, in order to help design a new education curriculum based on GNH values and principles, we are looking for a stock of knowledge that can be accumulated, invested in and enhanced to create the top level of the Daly triangle. This knowledge can also be eroded and allowed to depreciate or be forgotten. But first, we must ask: what do we need to know to create wellbeing and a sustainable world? And what is an educated populace?

1.4.2 Impacts of the knowledge society framework model

Currently, the Western economic sector is focusing and developing policy around the "knowledge economy," "knowledge society," and "information society."[117] Each concept

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[116] Ibid., accessed.

[117] Godin, Benoît. *The Knowledge-Based Economy: Conceptual Framework or Buzzword?*, Montreal, Project on the History and Sociology of S&T Statistics Working Paper No. 24, Canadian Science and

has its unique focus—economy, society, or information and communications technology (ICT), but, basically, they share a central concept. This is the idea that knowledge and technology are driving economic development and moving the economy from one based on industrial development toward one based on knowledge-intense services. As Peters and Humes articulate it: "National policies for encouraging knowledge generation, knowledge acquisition, knowledge diffusion, and the exploitation of knowledge have become the most pressing priorities in the science, research and education policy regimes."[118]

The economic sector rarely includes consideration of sustainability within its conceptual frameworks or indicator sets. However, the emphasis on knowledge and learning in the economic domain has produced elements that may be useful to include within a GNH curriculum framework, especially in the realms of research and development (R & D), science and technology, innovation, and in the links between higher education, government, and corporate research. It is also important to include this information within the context of lifelong/ lifewide learning and adult education and skill development. In terms of knowledge, it would be useful to know what knowledge and which innovations are being created, and how this knowledge is used. There are statistics on the number of patents registered, for instance, but that tells us little of the value of the knowledge being produced.

However, the frameworks used in the economic domain are mostly not useful to a GNH curriculum framework, as the following overview of the conceptual basis will illustrate. Benoît Godin of the Canadian Science and Innovation Indicators Consortium (CSIIC) gives a brief history of the concept of the "knowledge economy." The term first appeared in the literature in 1962 and became part of the Organisation for Economic Co-operation and Development (OECD) national systems of innovation (NSI) and was also taken up by the World Bank.[119] Essentially, the OECD revived the concept in 1995 and defined knowledge-based economies as "economies which are directly based on the production, distribution and use of knowledge and information."[120] They identified knowledge institutions as those that have a high-level of investment in innovation, intensive use of technology, and a highly educated workforce.

The premise of unlimited growth and progress on which the paradigm is based, however, is not sustainable according to many researchers. John Peet of the University of Canterbury in Australia argues that whether society is knowledge-based or industrial-based, economic growth depends on use of natural resources—it has a material and

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Innovation Indicators Consortium (CSIIC), 2003; accessed December 2005; available from http://www.csiic.ca/PDF/Godin_24.pdf.

[118] Peters, Michael A., and Walter Humes. "Education in the Knowledge Economy," *Policy Futures in Education*, vol. 1, no. 1, 2003: 1-19.

[119] Godin. *The Knowledge-Based Economy: Conceptual Framework or Buzzword?*, accessed.

[120] Organisation for Economic Co-operation and Development (OECD). *The Knowledge-Based Economy*, STI Outlook, 1996; accessed December 2005; available from http://www.oecd.org/document/62/0,2340,en_2649_34269_1814439_1_1_1_1,00.html. p. 12.

energy dimension. However, this dimension is largely ignored in the production/ consumption model of economics.[121]

Eckersley, among others, has pointed out that "equating more with better" and equating "standard of life" with "quality of life" is becoming questioned in the research literature. However, the issue remains largely unquestioned in mainstream political policy and public debate.[122] He gives three main reasons why the rationale for economic growth is flawed. Although we have cited this earlier, it is worth repeating here:

1. [The rationale for economic growth] reflects too narrow a view of human wellbeing, and fails to explain why, after 50 years of rapid growth, so many people today appear to believe life is getting worse.
2. It overestimates the extent to which past improvements in material wellbeing are attributable to growth.
3. It underestimates the gulf between the magnitude of the environmental challenges we face and the scale of our responses to them.[123]

Eckersley continues:

> The issue of contention in the debate about progress is not growth versus no-growth. That growth is better than recession in generating jobs—the main political justification for promoting growth—is insufficient reason for not looking much more closely at what is growing, what other effects this growth is having, and what alternatives might exist. We need to examine more critically the whole basis on which progress is currently defined, measured and achieved. To suggest this is not necessarily to be anti the economy, business or technological innovation; it is to argue that these activities need to be driven by different values towards different ends.[124]

Canadians Godin and Doré have developed a framework specifically concerned with knowledge and the impacts of knowledge on society, which, for the most part, uses data regularly collected in Canada and other countries.[125] They use the terms knowledge, research, science, and scientific knowledge interchangeably. This model, of all the models we reviewed in the economic area, is the most inclusive one we have seen.

Godin and Doré want to be clear that outputs such as numbers of research papers and

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[121] Peet, John. *Technology for Sustainability - Some Facts and Some Fallacies*, Christchurch, AU, Department of Chemical & Process Engineering, University of Canterbury, 2004; accessed April 2005; available from http://www.nzsses.org.nz/Conference/Session3/John Peet Keynote Text.pdf.
[122] Eckersley. "Perspectives on Progress: Economic Growth, Quality of Life and Ecological Sustainability."
[123] Ibid. p. 2.
[124] Ibid.
[125] Godin, Benoît, and Christian Doré. *Measuring the Impacts of Science: Beyond the Economic Dimension*, Montreal, Canadian Science and Innovation Indicators Consortium (CSIIC), 2003; accessed April 2005; available from http://www.csiic.ca/PDF/Godin_Dore_Impacts.pdf.

patents are a direct result of research activity, while outcomes or impacts are the indirect effects of this activity on society. They use the following example:

> Take, for example, the case of poverty. Output, namely knowledge or guidelines for public programs produced by social scientists can have an impact on society when integrated into public policies, which in turn affect poverty. The direct impact of scientific knowledge here is its effect on policies, while the indirect effects on poverty are due to numerous factors, among them knowledge integrated into policies.[126]

The researchers are also concerned with specifically identifying transfer mechanisms by which science impacts society. Transfer consists of four elements that must be measured: knowledge diffusion, acquisition, introduction or integration, and use.

Godin and Doré developed their model through their work with the Canadian Science and Innovation Indicators Consortium (CSIIC), in consultation with researchers from 17 publicly funded research centres in the social sciences and humanities, natural sciences and engineering, and health sciences fields, as well as with users of research results from 11 social and economic organizations. From these consultations, they developed a typology with 11 categories of knowledge impact, each of which are further subdivided. This typology is shown in Table 1 below.

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[126] Ibid., accessed.

Table 1. Impact of science on society

Science	Organisation
• Knowledge	• Planning
• Research activities	• Work organisation
• Training	• Administration
	• Human resources
Technology	
• Products and processes	**Health**
• Services	• Public health
• Know-how	• Health system
Economy	**Environment**
• Production	• Management of natural resources and the environment
• Financing	• Climate and meteorology
• Investments	
• Commercialization	**Symbolic**
• Budget	• Legitimacy / credibility / visibility
Culture	• Notoriety
• Knowledge	
• Know-how	**Training**
• Attitudes	• Curricula
• Values	• Pedagogical tools
	• Qualifications
Society	• Graduates
• Welfare	• Insertion into the job market
• Discourses and actions of groups	• Fitness of training / work
	• Career
Policy	• Use of acquired knowledge
• Policy-makers	
• Citizens	
• Public programs	
• National security	

Source: Godin, Benoît, and Christian Doré. *Measuring the Impacts of Science: Beyond the Economic Dimension*. Canadian Science and Innovation Consortium (CSIIC), 2003

Godin and Doré list possible indicators for each of the elements in Table 1. They note that, although some indicators build on existing statistics, others need "proper and systematic surveys," for which they offer suggestions. These knowledge impact indicators can be found in Appendix 10.

1.4.3 Human capital model

While there is no single agreed upon definition of human capital, there is a general consensus that it is an "intangible asset" and extremely difficult to measure.[127] There is also the question as to whether it is appropriate to measure it at all.[128]

The conventional definition of human capital is "the capabilities or capacities, both innate and derived or accumulated, embodied in the working-age population that allow it to work productively with other forms of capital to sustain economic production." This has been coined the "labour analogue to produced capital."'[129, 130] In other words, it is the "knowledge and skills that the working-age population (or, more narrowly, the labour force) accumulates through formal educational attainment, training, and experience."[131] This is essentially the definition used by the Canadian Policy Research Networks, Inc. (CPRN), and others, which recently released seven research papers on the subject of human capital, and who define human capital as "skills and knowledge that can be drawn upon (like any 'asset') by an individual to generate outputs of value."[132]

Saunders argues that while "one could imagine a broader definition of human capital that goes well beyond skills and knowledge" the scope of the investigation conducted by CPRN was in fact quite broad. He writes that health did not qualify as human capital in the approach taken by CPRN, but that it is viewed in the context of affecting the acquisition of human capital, and as an outcome of acquiring human capital. Saunders also notes that "outputs of value" include non-market outputs such as civic engagement.[133]

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[127] Leadbeater, Charles. "New Measures for the New Economy." Paper presented at the International Symposium: Measuring and Reporting Intellectual Capital: Experience, Issues, and Prospects, Amsterdam, 1999, Centre for Business Performance of the Institute of Chartered Accountants in England and Wales; accessed June 2005; available from http://www.oecd.org/dataoecd/16/24/1947910.pdf.

[128] Centre for the Study of Living Standards. *Proposed Framework on Human Capital Indicators*, Document prepared for the National Round Table on the Environment and the Economy Environment and Sustainable Indicators Initiative (ESDI). Ottawa: Centre for the Study of Living Standards, 2001.

[129] Sharpe, Andrew. *The Development of Indicators for Human Capital Sustainability*, Ottawa: Centre for the Study of Living Standards, 2001.

[130] Yu, Weiqiu. *A Survey of Existing Indicators for Human Capital. Background Paper for the Human Capital Cluster Group*, Ottawa: National Round Table on the Environment and the Economy, 2001.

[131] Sharpe. *The Development of Indicators for Human Capital Sustainability*.

[132] Saunders, Ron. *Skills and Knowledge for Canada's Future: Seven Perspectives toward an Integrated Approach to Human Capital Development, Overview*, Ottawa: Canadian Policy Research Networks Inc., 2006. p. 1. The research program on human capital was managed by CPRN, the School of Policy Studies at Queen's University, and Statistics Canada. See also: Picot, G., R. Saunders, and A. Sweetman (eds.). *Fulfilling Potential, Creating Success: Perspectives on Human Capital Development,* Kingston and Montreal: McGill-Queen's University Press, 2007.

[133] Ibid. p. 1.

The National Round Table on the Environment and the Economy (NRTEE) defines human capital as the "knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being."[134] This definition of human capital extends beyond those capital assets linked directly to productivity to encompass factors that reflect the broader values associated with a healthy, well-educated population.

Everything else being equal, an experienced and well-educated workforce will be more productive than one with less human capital. It will be more innovative and will work more efficiently. Similarly, a healthy workforce will be more productive than an unhealthy one.

Like produced capital, human capital is susceptible to deterioration. This is partly because workers retire and have to be replaced, but also because knowledge and experience can become obsolete as new technology is introduced. Therefore, continual investment in the factors that contribute to human capital is required if the economy is to be sustainable.[135]

Despite the effort to define human capital more broadly to include its contribution to personal and social wellbeing, most attempts at measuring human capital, including that of the NRTEE, only consider the knowledge and skills acquired through formal education. As part of its Environment and Sustainable Development Indicators (ESDI) initiative, the NRTEE selected an indicator for human capital sustainability: the educational attainment of the working-age population.[136] The NRTEE defines its indicator of human capital as follows:

> The Human Capital Indicator measures the percentage of the population between the ages of 25 and 64 that has gained upper-secondary and tertiary-level educational qualifications […]. In other words, this indicator tracks the proportion of people who have achieved at least a university bachelor's degree, or a diploma or certificate from educational institutions beyond the secondary level.[137] This indicator also includes individuals who have earned certificates below the bachelor level from a university.[138]

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[134] Organisation for Economic Co-operation and Development (OECD). *The Well-Being of Nations: The Role of Human and Social Capital*, OECD, 2001. p. 18.

[135] National Round Table on the Environment and the Economy. *Environment and Sustainable Development Indicators for Canada*, Chapter 4.7, 2003; accessed December 2005; available from http://www.nrtee-trnee.ca/Publications/PDF/Report_Indicators_E.pdf.

[136] Ibid., accessed.

[137] These institutions include vocational schools, community colleges, and schools of nursing, as well as any type of apprenticeship training.

[138] National Round Table on the Environment and the Economy. *Environment and Sustainable Development Indicators for Canada*, accessed.

Beyond this rather limited perspective, however, human capital also has qualitative aspects that reflect the quality of formal, informal, and non-formal education, rather than simply the formal attainment of a degree, diploma, or certificate. Broader measures of attainment would better capture the substantial contribution of human capital to individual productivity outside the labour market in a wide range of non-market activities.

Statistics Canada does not currently provide estimates of the value of human capital. Despite the conceptual and data challenges that exist, there have been other attempts to measure human capital besides the NRTEE initiative, including some that have attempted to compare its aggregate value to other forms of capital. Jorgenson and Fraumeni (1989) found that the value of human capital in the U.S. exceeded the value of physical capital 11 times over the time period 1948–1984.[139] Likewise, Osberg and Sharpe (2000) found that the value of human capital in Canada exceeded the value of economic and natural capital, but not as dramatically as in the findings of Jorgenson and Fraumeni.[140]

According to the Centre for the Study of Living Standards, the monetary value of the average educational attainment of the working-age population can be estimated in two ways:

1. **Supply-side cost of production approach**: The total cost of educating the population at this point in time is derived from the current average cost of a year of education at the various levels of education and the distribution of the population among the various levels of educational attainment.[141]

2. **Demand-side future earnings approach**: The value of human capital attributable to formal educational attainment can be calculated by estimating the stream of future earnings of the population arising from that education and calculating the present value of this earnings stream with a discount rate."[142]

Using formal "educational attainment" as an indicator of human capital, however, is considered by many to be "too narrow" an approach.[143] In the NRTEE's survey of existing indicators, it found two other frequently used indicators for human capital: test scores and earnings differentials of workers with different skills. However, the NRTEE determined that testing for competence lacked consistency and was subject to data availability, while earnings differentials depended on "how efficiently the labour market functions in the new economy."[144] The NRTEE did point to "future improvements" that should be made in developing better indicators of human capital:

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[139] Sharpe. *The Development of Indicators for Human Capital Sustainability*.
[140] Ibid.
[141] Centre for the Study of Living Standards. *Proposed Framework on Human Capital Indicators*.
[142] Ibid.
[143] Yu. *A Survey of Existing Indicators for Human Capital. Background Paper for the Human Capital Cluster Group*.
[144] Ibid.

Although useful, this measure—like other quantitative measures of human capital—does not provide information on the quality of human capital being accumulated (or lost). Measures of functional literacy and numeracy, as well as new means of measuring educational outcomes and less formal forms of training, will be needed as the human capital accounts within the SNA [System of National Accounts] are further developed.[145]

As noted, the NRTEE's indicators are intended to measure the sustainability of human capital, or whether human capital is remaining constant or improving over time. If outcome indicators of human capital deteriorate over time, then they are considered unsustainable.[146] Part of the rationale provided for measuring human capital is its link to other types of capital, including natural capital:

- A population with high knowledge and skills can expand the natural capital base by finding additional resources, exploiting more efficiently the existing resource base with new techniques, and developing substitutes for resources in short supply.
- A population with high knowledge and skill level has the ability to develop technologies to address environmental problems threatening the world's ecosystems.
- More indirectly, human capital accumulation increases national income which provides the resources to address environmental problems, in many cases with current technologies.[147]

Human capital has linkages to economic capital. High levels of knowledge and skills can lead to the development of "better capital goods." In addition, "human capital accumulation increases national income which increases the demand for capital goods."[148]

1.4.4 Three lifelong and lifewide learning measurement frameworks

This section illustrates three frameworks used for measuring and analyzing lifelong learning, which have relevance to a GNH curriculum design. The first two come from Canada, and are both developed within the economic domain. However, they are more inclusive than general economic frameworks since they incorporate public and private social benefits as well as economic information. The third framework is from the

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[145] National Round Table on the Environment and the Economy. *Environment and Sustainable Development Indicators for Canada*, accessed.
[146] Centre for the Study of Living Standards. *Discussion Paper on Health and Education Human Capital Indicators*, 2001; accessed December 2005; available from http://www.nrtee-trnee.ca/eng/programs/Current_Programs/SDIndicators/Program_Research/CSLS-DiscussionPaper_E.pdf.
[147] Sharpe. *The Development of Indicators for Human Capital Sustainability*.
[148] Ibid.

Working Group on Quality Indicators of Lifelong Learning in Europe, a multi-national group working on developing new indicators for lifelong learning.

1. "Conceptual Framework for the Analysis of the Social Benefits of Lifelong Learning": Walter McMahon[149]

Walter McMahon reports that some of the most important work in economics is currently the identification and measurement of market and nonmarket returns to education and of the relationship between social benefit "externalities" and investments in education.[150] McMahon's study relies on the considerable empirical evidence of the mostly positive influences of formal education on social and economic benefits, at both the individual and society levels. Although nonformal and informal modes of learning are not directly accounted for, the following lists of effects of lifelong learning identified by McMahon may be of interest. The lists below present externalities of education on which there has been empirical research.

Identification of private non-monetary benefits of lifelong learning

1. Health effects
   Reduced infant mortality
   Lower illness rates
   Greater longevity
2. Human capital produced in the home
   Children's education enhanced
3. More efficient household management
   Higher returns on financial assets
   More efficient household purchasing
4. Labour-force participation rates
   Higher female labor-force participation rates
   Reduced unemployment rates
   More part-time employment after retirement
5. Lifelong adaptation and continued learning
   Use of new technologies within the household (e.g., the Internet)
   Obsolescence: human capital replacement investment
   Curiosity and educational reading; educational TV/ radio
   Utilization of adult education programmes
6. Motivational attributes
   Productivity of non-cognitive skills
   Selective mating effects
   Divorce and remarriage (potentially negative returns)

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[149] McMahon, Walter W. "Conceptual Framework for the Analysis of the Social Benefits of Lifelong Learning," *Education Economics*, vol. 6, no. 3, 1998: 309-346.
[150] Ibid.

7. Non-monetary job satisfactions
8. Pure current consumption effects
   > Enjoyment of classroom experiences
   > Leisure time enjoyments while in school
   > Childcare benefits to the parents
   > Hot lunch and school-community activities

Identification of the public good benefits of lifelong learning

1. Economic output and economic growth effects
   > Economic growth externalities: direct effects
   > Structural feedback effects on growth
2. Non-monetary social benefits
   > Population and health effects (controlling for income)
   > Lower fertility rates
   > Lower net population growth rates

   Public health
   > Democratization (controlling for income)
   > Human rights
   > Political stability

   Poverty reduction and crime (controlling for income)
   > Poverty reduction
   > Lower homicide rates
   > Lower property crime rates

   Environmental effects (controlling for income)
   > Deforestation (for cooking, and export, given low education)
   > Water pollution
   > Air pollution

   Family structure and retirement (controlling for income) impacts
   > Higher divorce rates (potentially negative returns)
   > Later retirement
   > More work after retirement

   Community service effects of education (controlling for income)
   > Time volunteered to community service within income strata
   > Generous financial giving within income strata
   > Knowledge dissemination through articles, books, television, radio,
   > computer software and informally (use of libraries)

3. Income distribution effects of lifelong learning
   Poverty reduction
   > Reduction of rural poverty
   > Reduction of structural unemployment

   Geographic spillovers
   > Migration to urban ghettoes

Firm location decisions
Reduction of inequality
'Growth with equity' effects over time

McMahon summarizes the detailed methodology used in his study:

> The basic method for measuring the non-market returns to lifelong learning involves estimating the marginal product of the increment to education in producing the non-market outcomes using a household production function. For example, in the case of the product 'better own-health,' Grossman's (1995) study of the Thorndike sample[151] is the basis for computing that a 2-year increase in schooling, such as completing grades 11 and 12, or a 2-year post-secondary degree programme, lowers the probability of death in any given year by 0.88%, thereby increasing longevity. This marginal product is a non-monetary return to education since it is estimated after controlling for income in order to avoid double-counting the monetary returns to education which also affect longevity.
>
> To place a value on these non-monetary returns in terms of efficiency, the basic method is to ask how much it would cost to produce this same outcome using alternative means available in the market. For example, how much would it cost to produce this same increment to longevity on average by purchasing more doctors' visits and health-care inputs? This then is assumed to be the value that the individual is placing on this non-market outcome at the margin.[152]

2. "Determinants of Economic and Social Outcomes from a Life-Wide Learning Perspective in Canada": Richard Desjardins[153]

To understand how education and learning lead to social and economic benefits, Desjardins builds on McMahon's study by using the lifelong learning approach, but he also includes the horizontal, lifewide influences of nonformal and informal learning.[154] His study uses data only from the Canadian section of the International Adult Literacy Survey (IALS). The results of Desjardin's study show that different learning activities undertaken for personal or work-related reasons lead to different kinds of benefits. His thesis uses a definition of human capital from the OECD, which indicates that "the acquisitions of knowledge and skills, which can potentially lead to social and personal well-being, even without affecting economic well-being, are also justified as

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[151] Grossman, M. "The Correlation between Health and Schooling," in *Household Production and Consumption*, ed. Terleckyi, N., 147-211. New York: Columbia University Press, 1975.

[152] McMahon. "Conceptual Framework for the Analysis of the Social Benefits of Lifelong Learning." pp. 316–317.

[153] Desjardins, Richard. "Determinants of Economic and Social Outcomes from a Life-Wide Learning Perspective in Canada," *Education Economics*, vol. 11, no. 1, 2003: 11-38.

[154] Ibid.

investments."[155] Desjardins points out that very few studies have examined multiple outcomes simultaneously to determine interconnected effects. Also, the lifewide span of sources of knowledge and skills is under-researched. Research efforts have concentrated on job-related training, but few studies have considered informal learning outside the work context related to personal interest. Estimates of non-monetary returns to education have been shown in the research to be approximately equivalent to monetary returns.

The structural model and the indicators Desjardins uses are shown in Figure 5 below.

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[155] Ibid.

Figure 5. The determinants of economic and social outcomes of acquiring knowledge and skills from a lifewide learning perspective
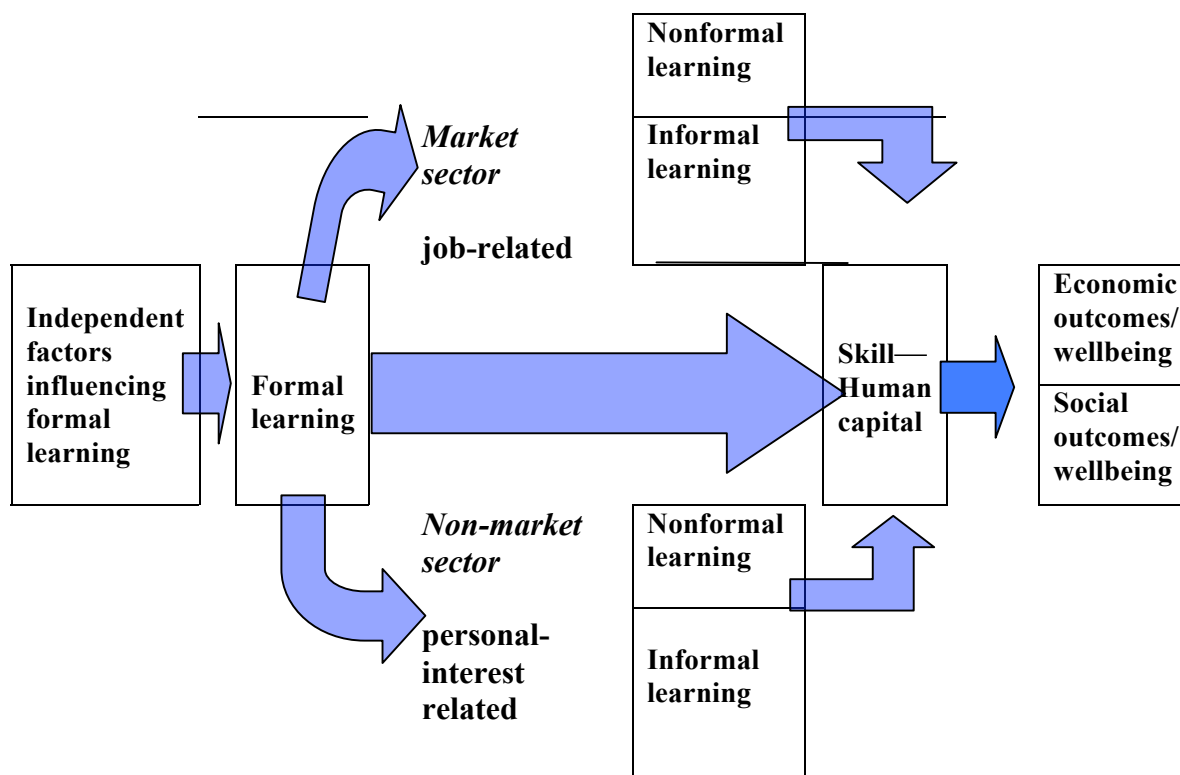
Source: Desjardins, Richard. "Determinants of Economic and Social Outcomes from a Life-Wide Learning Perspective in Canada." *Education Economics, Vol. 11, No. 1* (2003): 11-38, p. 15.

Desjardins notes that the formal learning indicators are stock measures, but most nonformal learning indicators, such as on-the-job training, are available as non-cumulative flow measures. Therefore, Desjardins advises: "[T]he model should be interpreted as the causation of initial formal learning on flow of subsequent learning and, in turn, their effects on outcomes."[156] There is evidence, however, that adult education and training do have cumulative effects over time.

Table 2 below shows the theoretical and observed variables of indicators of economic and social outcomes of lifelong learning used by Desjardins. All of the data used come from the IALS.

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[156] Ibid.

Table 2. Indicators of economic and social outcomes of education

Theoretical variable	Observed variable
Independent variables (factors influencing formal learning)	
Home background	Father's educational attainment
	Mother's educational attainment
	Father's two-digit SOC occupation
Experience	Age minus years of education minus five
Non-native language status	Non-native language status
Gender	Gender
Dependent variables	
Formal learning	Highest level of education completed
	Years of schooling
Labour force participation	Labour force participation
Knowledge intensity of occupation	Classification of four-digit occupation
Nonformal job-related learning	Participation in job-related adult education and training
Informal job-related learning	Intensity of writing letters or memos at work
	Intensity of reading articles or reports at work
	Intensity of writing articles or reports at work
Informal personal interest-related learning	Frequency of visits to library
	Intensity of writing letters at home
	Intensity of reading books at home
Nonformal personal interest-related learning	Participated in personal interest related adult education and training
Skill	Quantitative literacy
	Document literacy
	Prose literacy
Economic outcomes	Annual earnings from wages and salaries
Social outcomes	Frequency of participating in volunteer or community organizations

Source: Desjardins, Richard. "Determinants of Economic and Social Outcomes from a Life-Wide Learning Perspective in Canada." *Education Economics, Vol. 11, No. 1* (2003): 11-38, p. 20.

3. "European Report on Quality Indicators of Lifelong Learning": European Commission[157]

The Working Group on Quality Indicators of Lifelong Learning, which includes representatives from 34 countries, the OECD and UNESCO, began meeting in January 2001 to develop indicators for all the areas of education and training encompassed by lifelong learning.[158] The work of this group built on that of the Eurostat Task Force on Measuring Lifelong Learning, which began in February 2000. This task force analyzed the methodological and statistical aspects of lifelong learning and presented their recommendations at a seminar on measuring lifelong learning in Parma, Italy, in February 2001.[159] This task force essentially reviewed all of the data sources available for use in lifelong learning measurement, which mainly are formal education data, labour force surveys, time use surveys, income and household surveys, adult learning surveys, literacy surveys (IALS), and student assessments such as PISA. It recommended modifying existing surveys to include both formal and informal aspects of lifelong learning and, in the medium and long term, to design a new, comprehensive, lifelong learning adult education survey for Europe. The ultimate goal is to develop an integrated European Statistic Information System on education and learning.[160]

In June 2002, the task force released a report from the Working Group on Quality Indicators, which included indicators of lifelong learning drawn from existing data.[161] Fifteen quality indicators are contained in four areas: skills, compentencies, and attitudes; access and participation; resources for lifelong learning; and strategies and system development. The table, which illustrates the indicators, the definitions, and data sources used, is located in Appendix 2.

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[157] Working Group on Quality Indicators. *European Report on Quality Indicators of Lifelong Learning*, Brussels, European Commission, 2002; accessed April 2005; available from http://europa.eu.int/comm/education/policies/lll/life/report/quality/report_en.pdf.

[158] Ibid., accessed.

[159] Eurostat Task Force on Measuring Lifelong Learning. *Report of the Eurostat Task Force on Measuring Lifelong Learning*, European Commission, 2001; accessed April 2005; available from http://forum.europa.eu.int/Public/irc/dsis/edtcs/library?l=/public/measuring_lifelong&vm=detailed&sb=Title.

[160] Ibid., accessed.

[161] Working Group on Quality Indicators. *European Report on Quality Indicators of Lifelong Learning*, accessed.

2. Conventional Western education indicators

> *[R]ejoicing that university education has become a growth industry, administrators and legislators seek increasingly to control problems of scale by applying lessons from profit-making enterprises that turn expanded markets to advantage by cutting costs. Increased output of product can be measured more easily as numbers of credentialed graduates than as numbers of educated graduates. Quantity trumps quality.*
>
> Jane Jacobs [162]

An indicator is a statistic that can be used to assess progress in many ways, including to "measure our collective wellbeing."[163] An education indicator, which is a statistic that should measure the health of the education system, is based on the underlying values of that system. Thus, information on Western conventional education indicators can contribute important information (and caveats) useful in designing alternative education systems, such as the proposed GNH-based educational curricula system for Bhutan. "Like the odometer, speedometer, temperature, and fuel gauges in a car, education indicators provide essential information about the system's current functioning, suggest whether good progress is being made, and warn of potential problems."[164]

Not all statistics are created equal, however. For a statistic to be an indicator it must meet certain standards and satisfy certain substantive and technical criteria.[165] There appears to be general agreement in the literature about what characterizes a good indicator. Essentially, education indicators should provide at least one of the following "substantive" criteria:

- Provide a benchmark for measuring progress by describing the educational system's performance in achieving a desired condition (e.g., decreased drop out rates, greater equity, safer schools).
- Provide information about a feature of the system known to be linked with desired outcomes and in this way have predictive value.

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[162] Jacobs, Jane. *Dark Age Ahead*, New York: Random House Canada, 2004. p. 49

[163] Special Study Panel on Education Indicators. *Education Counts. An Indicator System to Monitor the Nation's Educational Health*. p. 12.

[164] Oakes, Jeannie. *Educational Indicators: A Guide for Policy Makers*, Santa Monica: Center for Policy Research in Education, 1986.

[165] There are two types of indicators: single statistics and composite statistics. Single statistics measure one aspect of the education system (e.g., class size, teachers' salary, total expenditure). Composite statistics show a relationship between two or more components of the education system (e.g., pupil-teacher ratio, education expenditure relative to GDP). A composite index combines many features of the educational system into a single number designed to assess the state of learning in a specific locale. According to Oakes, composite statistics are particularly suitable in education where "much of what happens results from several circumstances and events taking place at the same time." Ibid. pp. 3–6.

- Provide information about enduring or central features of the education system in order to understand how the system works (e.g., financial resources available, curricular offerings).
- Provide information about current or potential problems in the system (e.g., teacher supply and demand, circumstances of inner-city schools).
- Provide information about educational conditions that are of concern to society and policy-makers and that can be changed by policy decisions.[166, 167]

In addition, good education indicators should also meet the following technical criteria:

- Indicators should provide information about central and enduring features of the education system (e.g., pupil-teacher ratios, per pupil expenditures) so that statistics can be compared from one locale to another.
- Indicators should be readily understood.
- Indicators should measure observed behaviour rather than perceptions.
- Indicators should be feasible in terms of time, cost, and expertise required to collect the data.
- Indicators should be generally accepted as valid and reliable at measuring what they were intended to measure.[168, 169]

A Special Study Panel created by the U.S. National Center for Education Statistics in 1991 identified three additional criteria for education indicators:

- Indicator information must focus on what matters most about learning and about schools and colleges.
- Indicator information must assess the social context within which education takes place.
- Indicator information must reflect important national values and aspirations for education.[170]

The current popularity of education indicators is partly rooted in the expectation they will be able to fulfill a myriad of functions, from reporting on the status of the education system, to monitoring changes, explaining the causes of conditions, sketching the strengths and weaknesses of the system, and predicting future changes.[171, 172] However,

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[166] Oakes. *Educational Indicators: A Guide for Policy Makers*. pp. 1–2.
[167] Organisation for Economic Co-operation and Development (OECD). *The OECD International Education Indicators. A Framework for Analysis*, Paris: OECD, 1992. pp. 14–15.
[168] Ibid. p. 20.
[169] Oakes. *Educational Indicators: A Guide for Policy Makers*. pp. 1–2.
[170] Special Study Panel on Education Indicators. *Education Counts. An Indicator System to Monitor the Nation's Educational Health*. p. 23.
[171] Oakes. *Educational Indicators: A Guide for Policy Makers*. pp. vii–viii.
[172] Organisation for Economic Co-operation and Development (OECD). *Education at a Glance. Analysis*, Paris: OECD, 1996. p. 10.

the literature also suggests that these expectations may be unrealistic and that claims about what indicators can do should be viewed with caution.

According to the OECD, which has been involved in education indicator development since the late 1980s, "information from indicators can inform educational policy and improvement efforts" but "cannot provide a precise interpretation of past events, offer clear judgments about present conditions, or point to specific policy remedies for problems that are identified."[173] Indicators can track trends but cannot prove causality, unless such a relationship has been previously elucidated in the literature through longitudinal data or by combining evidence on education systems with non-educational indicators.[174] According to the Pan-Canadian Educational Indicators Program (PCEIP), indicators can show trends and pose questions but "cannot by themselves provide explanations or permit conclusions to be drawn."[175]

And finally:

> Social indicators lack the common referent available to economic indicators. Evoking an economic analogy and proposing a parallel development for social indicators is misleading because education cannot put each of its constructs on a common dollar metric as can be done, say, for Gross National Product. As Rivlin pointed out, '*No amount of disaggregation of inputs* […] *will provide a basis for answering the how-are-we-doing question in the education sector. As long as cost is used as a proxy for value there is no way to compare inputs with outputs or to see whether a given amount of education is being produced with fewer resources.*' Rivlin also noted that because students help produce education, it is difficult to disentangle the quality of the output from the quality of the student input.[176] [emphasis added.]

A detailed critique of the conventional education indicators will be presented below. Despite the limitations noted above, indicators are an essential tool to assess progress, evaluate performance, inform policy, and—perhaps most importantly—to mobilize society behind a common set of goals and objectives. The important critiques of existing education indicators, which do frequently send misleading messages in all these areas, are

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[173] Organisation for Economic Co-operation and Development (OECD). *The OECD International Education Indicators. A Framework for Analysis*. p. 10.

[174] Organisation for Economic Co-operation and Development (OECD). *Education at a Glance. Analysis*. p. 10.

[175] Statistics Canada. *About the Pan-Canadian Educational Indicators Program*, Statistics Canada, 2005; accessed March 14 2005; available from http://www.statcan/ca/english/freepub/81-582-XIE/2003001/about.htm.

[176] Shavelson, Richard J., Lorraine M. McDonnell, and Jeannie Oakes. "What Are Educational Indicators and Indicator Systems," *Practical Assessment, Research and Evaluation*, vol. 2, no. 11, 1991; accessed December 2005; available from http://pareonline.net/getvn.asp?v=2&n=11. Citing Rivlin, A.M. (1973) *Measuring Performance in Education*. In M. Moss (ed.), Studies in Income and Wealth. New York: Columbia University Press, pp. 411–437.

not a reason to abandon the use of indicators, but rather to overcome the identified flaws, and to develop better indicators that provide more accurate and comprehensive assessments of progress.

2.1 Conventional Western education indicators and conceptual models: primary and secondary education

2.1.1 Conventional Western education indicator models

According to Jeannie Oakes of the Center for Policy Research in Education:

> More than any other factor, the model chosen as the basis for selecting indicators will influence what information an indicator system will provide.[177]

In addition, in its education indicator framework, the OECD notes:

> To provide this overall picture, the selected indicators should be logically or empirically linked. The linkages should proceed from a model or framework that describes how the education system works.[178]

Common throughout the literature on education indicators is the recognition that the indicators must come from a conceptual model of how the education system actually works. In other words, a model or framework must be created first, from which indicators are derived.

A conceptual model shows the relationships among a group of concepts. Since the 1970s numerous models have been developed in the field of education indicators, their design largely contingent upon which theory of education (i.e., human capital theory, effective schools theory) was being employed at the time. The models also differed based on the unit of analysis (e.g., micro or macro), their scope, and what the intended function of the indicators was in the first place. In one comparative overview of education indicator models conducted by the OECD, eight conceptual models were summarized ranging from goal-oriented models to productivity models.[179] Indeed, the OECD has even noted that no single conceptual model may be appropriate for education indicators, and that there should be a "balanced approach" that embodies the different perspectives on how the

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[177] Oakes. *Educational Indicators: A Guide for Policy Makers*. p. 8.
[178] Organisation for Economic Co-operation and Development (OECD). *The OECD International Education Indicators. A Framework for Analysis*. p. 15.
[179] Ibid. pp. 25–41.

education system works in order to "properly portray the complex reality of education."[180]

With few exceptions, however, the model used by the vast majority of large-scale education indicator programs is the productivity model (I-P-O):

| input | → | processes | → | output |
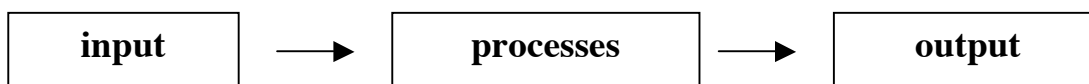
In principle, input (I) influences processes (P), which in turn produce output (O). In some cases the labels are changed from input to resources, and from output (actual products of the education system like graduation) to effects or outcomes (long-term impacts like enhanced economic productivity.

Often added to this basic model is an additional box representing context or environment. That is, background factors or characteristics like family characteristics that exist outside of the education system, but which influence the system. In essence, the input / output approach "assumes that students' educational outcomes are determined by the quantity and quality of the educational resources they receive. When processes are added to the input / output model there is an attempt to examine the ways in which the resources (input) are applied to the students."[181]

For example, inputs typically refer to the resources brought into the system (i.e., human and fiscal), processes would describe the system's structure and the way in which inputs are used and distributed (e.g., pupil-teacher ratio), and outputs would refer to the results that the system directly produces (e.g., number of graduates, number of drop-outs).[182] As noted, some indicator programs have gone a step further to include outcomes, which refer to long-term results and impacts of the educational system. For example, outcomes could include employment, earnings, status, attitudinal changes, behavioural changes, life satisfaction, or consumption behaviour.[183]

Despite the popularity of the productivity model, there have been numerous objections to its use. First, this approach presents the empirical problem of how to establish a causal, one-way relationship where input influences output. A number of researchers in the educational field have noted that establishing such a relationship is complicated, and that in reality there may be "indirect and even reverse causation" where outcomes influence inputs. For example, higher income, generally seen as an outcome of good education, may determine the quality of school attended (conventionally an input). In other words,

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[180] Ibid. p. 45.
[181] Ibid. pp. 26–27.
[182] Ibid. pp. 38–40. Citing J.N. Johnstone. 1981. *Indicators of Education Systems*. UNESCO. Paris.
[183] Ibid. p. 39. Citing D.M Windham. 1988. "Effectiveness Indicators in the Economic Analysis of Educational Activities," In *International Journal of Education Research*, Vol. 12. no. 6.

critics argue, the system should be thought of as dynamic, interactive, and open, where variables outside the system influence the system, rather than as a linear input / output equation.[184] [185]

According to a discussion paper prepared for the Council of Ministers of Education in support of the Pan-Canadian Education Research Agenda:

> [T]he major limitation of the I-P-O model is that it is merely a skeleton, giving no indication of what relationships should be examined or even what variables are worth measuring. In working from such a model there is a risk of reducing research to 'correlational fishing trips,' in which there is no prior concept of which input or process variables might be related to outcomes.[186]

The discussion paper authors concluded that the I-P-O model was not very "useful" and that what is needed is "mature theory," which should reflect the existing knowledge about relationships that may exist among variables and point to areas where more research is needed.

In 1989, the U.S. Department of Education convened a study panel of education experts, as well as experts from a variety of other academic disciplines, including economics and sociology, to review the existing education indicator models and the criteria for indicator selection, and to provide recommendations to the department. In 1991 the panel released its report, which was highly critical of both the productivity model as well as the criteria being used for indicator selection. It rejected the I-P-O model, stating it was "flawed" and "encouraged the view that the educational system produces 'products' by taking various raw materials (e.g., students or resources) and processing them in schools."[187] [188]The panel also noted that since the I-P-O model influenced the selection of indicators it could encourage school improvement "in ways that create solutions to the wrong problems."[189] UNESCO's *Education for All* report further supports this critique and argues that one of the main objections to the input-output approach is that "student behaviour and learning processes cannot be modeled like raw materials and finished products."[190]

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[184] Crocker. *Learning Outcomes: A Critical Review of the State of the Field in Canada*, accessed. p. 2.

[185] Schulz, Clark, and Crocker. *Learning Outcomes*, accessed. pp. 5–6.

[186] Ibid., accessed. p. 6.

[187] Special Study Panel on Education Indicators. *Education Counts. An Indicator System to Monitor the Nation's Educational Health*. p. 9.

[188] Neal. "Overview of Policy and Practice: Differences and Similarities in Developing Higher Education Accountability."

[189] Special Study Panel on Education Indicators. *Education Counts. An Indicator System to Monitor the Nation's Educational Health*.

[190] United Nations Educational Scientific and Cultural Organization (UNESCO). *Education for All. The Quality Imperative*. Vol. 2005 EFA Global Monitoring Report Summary, UNESCO, 2005.

According to Cave et al., the use of the I-P-O model also implies the acceptance of the idea that "concepts borrowed from industrial management" have a role in the education system and that background or environmental variables are "uncontrollable."[191]

Furthermore, suggest Smyth and Dow, the acceptance of the industrial model of input-output, efficiency, and productivity marginalizes other forms of "constructing and validating teaching and learning."[192] According to UNESCO, the model also ignores the ways in which "the process of learning and teaching—the creative interaction that happens in the classroom—affects educational quality."[193]

As previously stated, the U.S. Department of Education's Special Study Panel rejected the I-P-O model. The panel also entertained but rejected the goal-oriented approach—a conceptual model that has been used by UNESCO, as well as by the Netherlands' Central Bureau of Statistics. The panel concluded that while this approach was useful at defining goals, it was "largely oriented toward policies subject to change," and that the political goals of today were not necessarily the political goals of tomorrow.

Instead the panel chose to organize indicators around key educational issues, a model the panel named the "issue-oriented" approach.[194] "It would be comprehensive and complete in itself, incorporating enough fundamental ideas, priorities, and concepts to allow the public to appreciate interconnected aspects of the educational enterprise."[195] The panel concluded there were numerous advantages to using this approach, most notably that "[t]he issues provide the opportunity to capture for the public large and enduring educational themes [and can] add depth and breadth to the public's understanding of these important social institutions."[196]

The issues and indicators chosen by the Special Study Panel will be highlighted in the next section; the panel's indicators are also noted among those listed in Appendix 11 of this report.

2.1.2 Critique of conventional Western education indicators

As Smyth and Dow note:

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[191] Cave, Martin, Stephen Hanney, and Maurice Kogan. *The Use of Performance Indicators in Higher Education. A Critical Analysis of Developing Practice*, London: Jessica Kingsley Publishers, 1991. p. 23.
[192] Smyth, and Dow. "What's Wrong with Outcomes? Spotter Planes, Action Plans, and Steerage of the Educational Workplace." p. 298.
[193] United Nations Educational Scientific and Cultural Organization (UNESCO). *Education for All. The Quality Imperative*. p. 11.
[194] Special Study Panel on Education Indicators. *Education Counts. An Indicator System to Monitor the Nation's Educational Health*. p. 9.
[195] Ibid.
[196] Ibid. p. 10.

Educational outcomes have descended on schools with a ferocity unimaginable a few years ago. We have reached the point where outcomes rhetoric is so deeply embedded in the official discourses of schooling that it appears to be the only game in town.[197]

The use of performance indicators in the field of education was largely a product of the late 1970s and early 1980s. Around this time, publicly funded institutions were increasingly being scrutinized. Like many other institutions funded by the public purse, educational institutions were being asked to "justify their activities and account for their use of resources and their performance to external funding bodies in terms of their efficiency and effectiveness."[198] For example, in Britain, the case for using performance indicators was bolstered throughout the 1980s by then Prime Minister Margaret Thatcher's demand for greater accountability and "value for money" in terms of economic efficiency.[199] The theme of financial constraint had made its way into the halls of learning, and educational institutions had to start devising ways of proving they were not wasting taxpayers' hard-earned money.

As a result of this trend, the British government intervened in the traditionally autonomous universities and basically threatened to withhold funding unless certain changes were made. For example, government demanded that universities rationalize and, where appropriate, close small departments, manage finances better, and improve teaching standards. At the same time, public services in general, including education, were the focus of a number of proposals for performance measurement. What made these policy proposals particularly salient was that government funding had become tied to performance.[200] Performance, in turn, had become tied to the economy:

> The key objective of higher education was the urgent need to take increasing account of the economic requirements of the country […]. Government and its central funding agency will do all they can to encourage and reward approaches by higher education institutions which bring them closer to the world of business. [Substantial grants were then given to projects that aimed to] embed enterprise into the curriculum.[201]

In the 1980s, the use of performance indicators (PI) developed significantly in most Western countries, including the U.S. and Canada. However, the three countries that took the lead in developing PIs were the United Kingdom, the Netherlands, and Australia.[202] In the last two decades, however, particularly in Europe, the "accountability movement"

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[197] Smyth, and Dow. "What's Wrong with Outcomes? Spotter Planes, Action Plans, and Steerage of the Educational Workplace." p. 291.

[198] Cave, Hanney, and Kogan. *The Use of Performance Indicators in Higher Education. A Critical Analysis of Developing Practice*. p. 38.

[199] Ibid. pp. 40–44.

[200] Ibid. pp. 9–17.

[201] Ibid. p. 20. Cave et al. are citing from a British government report.

[202] Ibid. p. 66.

has "matured," and there has been a shift from the centralized, legislated approach taken by Thatcher in Britain, for instance, back to greater autonomy within educational institutions:

> Growing doubts about the ability to 'measure the unmeasurable,' particularly about the validity and reliability of some of the performance indicators used to evaluate and reward quality, have helped lead to such retrenchments […]. Performance indicators, for example, in Great Britain and the Netherlands are being regarded more as contextual background information to prompt or raise questions than to provide answers and serve as a source of rewards, as is increasingly occurring in the American system of higher education.[203]

In the U.S. the "call for accountability" within institutions of higher learning began in the 1980s with discussions around quality of instruction and the use of assessment to gauge success of teaching and learning. However, in the 1990s there was a "change in tone," and public policy makers became more concerned with "issues of productivity and efficiency." Publicly funded institutions were compelled to show reasons for continued investment of public money and were mandated by state legislatures to assess and report their performance based on a set of indicators.[204] Educational institutions, at the secondary and postsecondary levels, were under increased pressure to "respond to the real needs of the workplace."[205]

Critics have linked the rapid development and implementation of performance indicators in the U.S. to a number of factors. First, in response to a recession in the early 1990s, state governments reduced funding to higher education, which led to a hike in tuition fees and a shift of the financial burden onto students and families. This fuelled an increased appetite among the public for proof that universities were providing value for money. Second, universities were expected to meet a number of rising societal needs, including being a "critical source of research and public service" to address many of the "complex ills plaguing modern society." Third, there was also the expectation on an individual level that a college degree would provide economic mobility.

For the first time, the demographic profile of the students had changed to include older women and minority populations, who had historically been underrepresented in the college system. Thus, while state funding was declining, the need to educate a growing and diverse population was increasing, which raised concerns about "limited student access, erosion of quality, and additional burdens related to cost." Fourth, publicly funded

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[203] Gaither, Gerald H. "Some Observations While Looking Ahead," in *Assessing Performance in an Age of Accountability: Case Studies*, ed. Gaither, Gerald H. San Francisco: Jossey-Bass, 1995.

[204] Neal. "Overview of Policy and Practice: Differences and Similarities in Developing Higher Education Accountability." p. 6. Also, Ruppert, Sandra S. "Roots and Realities of State-Level Performance Indicator Systems," in *Assessing Performance in an Age of Accountability: Case Studies*, ed. Gaither, Gerald H. San Francisco: Jossey-Bass, 1995.

[205] Sims. *Student Outcomes Assessment. A Historical Review and Guide to Program Development*. pp. 15–16.

institutions in general were increasingly being scrutinized. State and federal policy makers began applying to the public sector the same management principles used by the private sector: "Organizations driven by a customer-defined mission embrace new systems of accountability. This new system focuses on achieving greater results for less money by measuring performance through outcomes."[206]

Some critics of the surge in indicator use related to economic policy objectives have linked it with other broad contemporary trends in Western countries, such as:

- a push for higher productivity through technological innovation
- lower wages along with reduced social benefits, and less protective working conditions, as the increasingly globalized economy forces workers in industrialized countries to compete with cheaper labour abroad
- decentralization of production to countries with relaxed environmental and labour regulations
- greater reliance on the informal economy (i.e., unregulated labour)
- a weakening of trade unions.[207]

The tendency of countries to strive for improved international competitiveness as national economies adjust to a global market has far-reaching implications for the education system. "In circumstances like these, education comes under the gun as it is simultaneously blamed for the economic crisis, while at the same time being held out as the means to economic salvation."[208]

According to Smyth and Dow, the economic pressure placed on the education system to supply the skills required by the global market changes the role of education from schools "for the betterment of society through a more educated citizenry," to "how best to control education by making it do its economic work through greater explicit emphasis on vocationalism, as well as by changing the ideology and the discourse of schooling (where students = customers; teachers = producers; and, learning = outcomes)."[209] In fact, according to some critics, performance indicators are designed to assess productivity "relative to the public investment made in it," as opposed to "an evaluation of educational outcomes relative to instructional processes."[210]

Against this globalized backdrop, argue Smyth and Dow, the best way to "control" education so that it produces what is required by the economy is by "recentralizing" control through national curricula, standardized testing, better forms of accountability,

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[206] Ruppert. "Roots and Realities of State-Level Performance Indicator Systems." pp. 13–16.
[207] Smyth, and Dow. "What's Wrong with Outcomes? Spotter Planes, Action Plans, and Steerage of the Educational Workplace." p. 293.
[208] Ibid. p. 293.
[209] Ibid. p. 294.
[210] Neal. "Overview of Policy and Practice: Differences and Similarities in Developing Higher Education Accountability." p. 6.

and greater reliance on measures of competence and performance such as use of performance indicators and outcomes.[211]

Furthermore, international competition also requires international comparisons. Most notable are efforts by the U.S. National Centre of Education Statistics, as well as the OECD, both of which have developed internationally comparable indicators designed tobe used to compare the performance of education systems internationally. According to the U.S. National Centre of Education Statistics:

> The need to compete in foreign markets with advanced technology has convinced U.S. business, economic, and political leaders of the importance of understanding the education systems of other industrialized nations. The awareness of how other countries educate their citizens provides insight into the competitiveness of those nations, and it provides a benchmark with which to compare our own education systems.[212]

Critics have argued that what is perhaps most problematic about education serving economic imperatives is that broader considerations such as the "the role of schooling in social justice, the inculcation of democratic values and the transmission of cultural values and forms of knowledge" becomes marginalized. "Any form of schooling will be acceptable only as long as it can demonstrate that it is attracting market share."[213] Crocker echoes this view and observes that "generic outcomes such as ability to function in a democratic society, social responsibility, critical thinking, lifelong learning, personal management, or teamwork are not adequately represented in the outcome statements found in most curriculum documents."[214]

Thus, it has been argued that conventional indicators as they currently exist are too limited, that many outcomes are not adequately represented, and that they exclude a broad range of outcomes. In fact, the Study Panel convened by the U.S. Department of Education concluded that choosing a limited set of indicators was "misguided" and did not "do justice to the complexity of the educational enterprise." The panel wrote:

> [A] limited set would not only reflect an educational agenda, it would define an educational agenda. If the nation agrees that mathematics and geography are important enough to warrant their own 'indicator,' but music and foreign languages are not, educators will respond. If the nation convinces itself that it needs indicators of educational expenditures or student achievement, but not indicators of expenditures on, and achievement levels of, particular groups of

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[211] Smyth, and Dow. "What's Wrong with Outcomes? Spotter Planes, Action Plans, and Steerage of the Educational Workplace."

[212] National Centre for Education Statistics. *Education Indicators. An International Perspective*, Washington, D.C.: U.S. Department of Education, 1996. p. iii.

[213] Smyth, and Dow. "What's Wrong with Outcomes? Spotter Planes, Action Plans, and Steerage of the Educational Workplace." p. 299.

[214] Crocker. *Learning Outcomes: A Critical Review of the State of the Field in Canada*, accessed. p. 24.

disadvantaged school and college students, we run the risk of ignoring significant education problems […]. If a limited set of indicators focuses attention on the wrong issues, we may create more educational problems than we solve.[215]

Thus, this argument is an important reminder that education indicators can have a profound effect on what curriculum is included in an education system, such as that proposed by Bhutan, and is also a good argument for developing broader and more comprehensive areas of study within the system. What we measure reflects what we value, and determines what gets attention and what makes it onto the policy agenda of governments. A narrow focus on GDP-based measures of progress not only "may create more […] problems than we solve," to borrow the panel's phrase, but skews policy responses and ignores key social issues like population health, environmental quality, and community vitality. In sum, in developing education indicators for Bhutan's new education curricula, a key goal would be to broaden the assessments of progress in order to gauge wellbeing more accurately and comprehensively. To do this, the criterion the U.S. Study Panel recommends could be a useful guide.

The selection of performance indicators can also be influenced by political pressure. Some critics argue that every aspect of the indicator process, from choosing indicators, to defining their purpose, to selecting data sources, and finally to deciding how they should be used, is a political issue.[216] Especially if "measures are tied to rewards," which is often the case in the U.S., there is a great deal of pressure placed on administrators and educators, who in turn may respond to the pressure to "bias responses in ways that might benefit them and their institutions—particularly if they feel they have had little say in the development process."[217]

Another criticism that has been levelled against the current selection of conventional education indicators, like enrolment and graduation rates and educational expenditures, is that they have been "developed quickly," based solely on the fact that there are data available and that they appear measurable.[218] The U.S. Study Panel stated that "indicators should address enduring issues. We should assess what we think is important, not settle for what we can measure."[219] Indeed, without such an expansive approach, there will never be pressure for new and needed data sets. Identifying important indicators for which data are not currently available, by contrast, can stimulate new data collection both by statistical agencies and, often on a trial basis, by independent research institutions.

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[215] Special Study Panel on Education Indicators. *Education Counts. An Indicator System to Monitor the Nation's Educational Health*. p. 7.
[216] Freeman, Thomas M. "Performance Indicators and Assessment in the State University of New York System," in *Assessing Performance in an Age of Accountability: Case Studies*, ed. Gaither, Gerald H., 35-39. San Francisco: Jossey-Bass, 1995.
[217] Ibid.
[218] Neal. "Overview of Policy and Practice: Differences and Similarities in Developing Higher Education Accountability." pp. 8–9.
[219] Special Study Panel on Education Indicators. *Education Counts. An Indicator System to Monitor the Nation's Educational Health*. p. 19.

There appears to be general agreement in the literature that there are many aspects of the education system that are extremely important and yet exceedingly difficult to measure. In other words, many important educational activities, particularly in the informal field and through non-cognitive learning mechanisms, simply cannot be measured.[220, 221, 222] The Maritime Provinces Education Foundation (MPEF) recognized this difficulty in 1993 and noted that "curriculum, teaching methods, non-curricular knowledge and equity are aspects of the teaching system that are especially hard to quantify and measure."[223]

In a report titled "Educating Canadians for the New Economy," LeBlanc concludes, based on the literature, that "we can only evaluate the performance of the education systems intelligently and usefully when we are willing to state its specific goals and some means of measuring them as outcomes."[224] He underscores, however, that when some outcomes are more difficult to measure than others, "the latter may end up being the only ones tested, thus assuming disproportionate importance and distorting the system."[225]

A further criticism of Western education indicator systems developed to date is that they are mainly concerned with descriptive or comparative data on finances, enrolment, levels of attainment and achievement, rather than serving their primary function as an analytical tool.[226, 227]

For example, in Canada, the Council of Ministers of Education implemented the School Achievement Indicators Program (SAIP), which is thought of as a comprehensive indicator program. However, it consists essentially of standardized testing of 13 and 16-year olds, and it only concerns itself with indicators of achievement. As it is currently configured, SAIP only assesses student performance in the areas of mathematics, science, and reading and writing.[228]

As previously noted, the problem with measuring achievement in only a few academic subject areas is that we begin to value only what is measured. In the case of SAIP, for instance, it was obviously decided that mathematics, English, and science had higher priority and were more important than music, art, history, social studies, civics, and

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[220] LeBlanc, J. Clarence. *Educating Canadians for the New Economy*, Moncton: Canadian Institute for Research and Regional Development. University of Moncton, 1994. p. 48.

[221] Special Study Panel on Education Indicators. *Education Counts. An Indicator System to Monitor the Nation's Educational Health*. p. 5.

[222] Gaither, Gerald H., ed. *Assessing Performance in an Age of Accountability: Case Studies*. San Francisco, Jossey-Bass, 1995.

[223] Maritime Provinces Educational Foundation report cited in LeBlanc. *Educating Canadians for the New Economy*. p. 47.

[224] Maritime Provinces Educational Foundation report cited in Ibid. p. 44.

[225] Ibid.

[226] Crocker. *Learning Outcomes: A Critical Review of the State of the Field in Canada*, accessed. p. 21.

[227] Schulz, Clark, and Crocker. *Learning Outcomes*, accessed. p. 5.

[228] Council of Ministers of Education Canada (CMEC). *The School Achievement Indicators Program (SAIP)*, accessed.

foreign languages. It has also been argued that student assessment programs are "often a reactionary measure to external calls for accountability" rather than an attempt to "appraise the student as an entire educated human being."[229]

With the exception of the recommendations of the U.S. Special Study Panel, student achievement in the humanities, social sciences, music, art, etc. was not included in the recommended indicator sets of any of the major standard indicator programs examined in this literature review. Furthermore, broader outcomes such as citizenship and volunteerism, commitment to craft, creative thinking, and critical thinking, which admittedly are much more difficult to measure, were not adequately represented in the recommended indicator sets examined. The same is true of the desired outcomes identified in most school curricular documents:

> It is clear that generic outcomes such as ability to function in a democratic society, social responsibility, critical thinking, lifelong learning, personal management, or teamwork are not adequately represented in the outcome statements found in most curriculum documents. The risk is that the larger picture can be lost by teachers and students following a subject-specific curriculum. This risk is exacerbated when broader outcomes are not assessed.[230]

With few exceptions, therefore, the conventional Western education indicators currently in use, whether focused on enrolment and graduation rates, or on standardized test results in a few fields, do not tell us much about the quality of education and whether the educational system is successful at creating an educated populace. For instance, they do not tell us whether students have learned to think and analyze for themselves, whether they have accumulated essential knowledge required to function in today's world (such as how to live sustainably and healthily), or whether their formal education has motivated them to contribute positively to society. These conventional indicators are also confined to the formal education system and do not take into account the education that takes place in informal and non-formal systems such as the home, workplace, and media, where a great deal of learning takes place.

According to Heather Menzies:

> Schools are losing their integrity as institutional wholes. Partly too, though, this is from outside accountability audits and the pressure for quantifiable outcomes per individual student and class. In the classroom, this translates as a focus on the detailed objectives for each strand of each subject being taught […]. The

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[229] Sims. *Student Outcomes Assessment. A Historical Review and Guide to Program Development*. pp. 23, 110.
[230] Crocker. *Learning Outcomes: A Critical Review of the State of the Field in Canada*, accessed. p. 24.

quantifiable stuff of test results is eclipsing the unquantifiable stuff of social engagement.[231]

Appendix 11 provides a list both of standard, conventional education indicators currently in use in Canada, the U.S., Europe, and the OECD, and a representative sample of large-scale indicator programs (i.e., international, national) as well as smaller-scale programs (i.e., provincial). Indeed, many other education indicators and indicator programs exist, but were not included in Appendix 11 for reasons of space. However, most other standard education indicators do not differ markedly from those listed in Appendix 11. By way of contrast with the themes covered by those indicator programs, the UNESCO Decade for Sustainable Development themes are also listed in Appendix 11.

The conventional education indicators listed in Appendix 11 were selected based on two criteria:

1. *Popularity and frequency of usage*: In many of these indicator systems, the same indicators (though worded somewhat differently) appear over and over again. This prevalence of usage and the widespread recognition of their apparent utility implies a very broad acceptance of these indicators by nations, provinces, school districts, and other jurisdictions.

2. *Relevance*: In some cases we came across education indicators that were unique in that they often did not appear in any of the other indicator literature, but nevertheless did provide valuable insight into alternative perspectives on the role and purpose of education in society.

The most commonly used education indicators, based on their inclusion by at least five (and often all seven) of the conventional indicator programs examined in Appendix 11, are the following:

- Expenditure per student
- Expenditure relative to the GDP
- Enrolment rates
- Secondary school graduation rates
- Student achievement in reading
- Student achievement in mathematics
- Student achievement in science

At least half of the seven standard indicator programs examined in Appendix 11 also included the following:

- Teacher quality

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[231] Menzies, Heather. *No Time. Stress and the Crisis of Modern Life*, Toronto: Douglas and McIntyre, 2005. pp. 178–179.

- High school drop out rates
- Labour market outcomes and employment status
- Education and earnings

It is apparent that most of these conventional indicators are inadequate to assess progress according to the broader view and definition of education described in this literature review. From the GNH educational perspective, they could provide only a very limited, partial, and in some ways misleading window on whether Bhutanese are becoming more educated, more informed, more knowledgeable, and wiser.

The Canadian Council on Learning (CCL) has also recently developed a Composite Learning Index (CLI), which uses 16 indicators in an attempt to include nonformal and informal learning, as well as formal educational attainment, "to measure the state of lifelong learning in Canada."[232] The indicators include:
- Student reading and math skills
- Student problem solving skills
- High school drop out rate
- Attendance in post secondary education
- University attainment
- Participation in job-related training
- Training at work
- Charitable giving
- Volunteer rate
- Spending on clubs
- Spending on reading materials
- Spending on the Internet
- Spending on sports and recreation
- Spending on performing arts
- Spending on visiting museums[233]

As the indicator list above demonstrates, the CCL has made an effort to link learning conditions with the broader issues of social and economic wellbeing. In addition, the CCL has not confined itself to the formal education system and has recognized that a great deal of learning takes place in informal and nonformal systems such as the home, workplace, and media. However, the CCL has also selected a number of indicators such as high-school dropouts, student achievement in only three areas, attendance in postsecondary education, and university attainment, which, as previously discussed, are inadequate to assess progress according to the broader view and definition of education described in this literature review. In addition, the CCL has not recognized the link between learning conditions and environmental wellbeing, which, from the GNH perspective, is a crucial aspect of educating the Bhutanese populace to become more knowledgeable and wise.

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[232] Canadian Council on Learning (CCL). *Website*, accessed.

[233] Cartwright, Mussio, and Boughton. *Developing the Composite Learning Index. A Framework*, accessed.

3. What is an Educated Populace?

A human being is part of the Whole [...]. He experiences himself, his thoughts and feelings, as something separated from the rest [...] a kind of optical delusion of his consciousness. This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few persons nearest us. Our task must be to free ourselves from this prison by widening our circle of compassion to embrace all living creatures and the whole of nature in its beauty. Nobody is able to achieve this completely, but the striving for such achievement is, in itself, a part of the liberation and a foundation for inner security.

Albert Einstein[234]

In February 2004, the Canadian Education Association (CEA) engaged almost 100 persons from diverse backgrounds in a dialogue asking: "What is an Educated Canadian?[235] According to Wiens and Coulter: "[The participants] were Canadians—young and older; female and male; Aboriginal and visible minority; policy makers (elected and non-elected); business leaders; academics; not-for-profit volunteers; public servants; teachers and students; artists and plumbers; poor and rich—it's hard to imagine a more diverse group agreeing to spend two days together."[236]

The forum started with small groups who were asked to describe persons they thought were "educated." They gathered back together after the exercise to compare notes. The results were somewhat surprising, especially since almost no one mentioned formal schooling as a prerequisite for being educated. In fact, some of the "educated" people mentioned as role models had only a primary formal education, but were overflowing in life education—whether it was a wise medicine person from a First Nations community in Nova Scotia who knew how to collect and use traditional plants, to a retired, trained but unschooled, carpenter from Quebec whose kindness and helpfulness touched all around him. Educated people were described in ways that emphasized values, care, concern for others, humility, empathy, having knowledge about, and love and appreciation of, life. The most common word used, as Wiens and Coulter note, was

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[234] Einstein, Albert, cited in The Primer Group. *The Primer Project. The First International Electronic Seminar on Wholeness*, International Society for the Systems Sciences (ISSS), 2000; accessed March 2005; available from http://www.newciv.org/ISSS_Primer/seminar.html.
[235] Huget, Stacey. *What Is an Educated Canadian?*, Final Report of the Leaders' Forum held in Vancouver, B.C. on February 25-27, 2004, Toronto: Canadian Education Association, 2004.
[236] Wiens, John R., and David Coulter. "What Is an Educated Canadian," *Education Canada*, vol. 45, no. 1, 2005: 21-23, Canadian Education Association.

"wise."[237] They also said that the "common language and vocabulary […] seemed to rise effortlessly from the groups."[238]

The next forum held by the CEA, in June 2004, created a dialogue with federal government departments and NGOs.[239] The main characteristic of an educated person, according to these participants, was higher cognitive skills. These are skills that result in "active citizenship, respect, social and environmental responsibility, anti-racism, courage, creativity, and critical thinking."[240] More specifically, the participants identified these traits of "the 21st century's educated Canadians" as:

- intellectually capable, personally productive, and socially responsible
- aware of the legacy of Canada
- understanding of the impacts of their actions on the environment
- empowered in their capacity to change the world
- having a sense of social justice and respect for diversity
- aware of their responsibilities as citizens
- skilled with strong literacy foundations to play an effective role in our society[241]

Participants at the June 2004 CEA forum were highly critical of the ability of the educational system, with its emphasis on testing and approach to schooling that sees children as "empty vessels waiting to be filled," to fulfill these goals.[242] They were concerned that the present learning environment in schools "may lead to Canadian children embracing competitiveness, passive consumerism, stress and egoism (pursuit of individual interests as opposed to contributing to the development of the community.)[243] The CEA report of the forum reports:

> [A]ccording to many, our current approach to the education of young Canadians hardly fosters the development of the attributes identified by the Canadian Education Forum participants. In fact, a look at many of Canada's education curriculums [*sic*] and pedagogical approaches could lead to the conclusion that our public education systems value knowledgeable individuals who do not feel empowered to question the values, assumptions and structures that are at the basis of the organization of their community, workplace, the Canadian society and the world. Considering the world in which we live today where questions of

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[237] Ibid.
[238] Ibid.
[239] Canadian Education Association (CEA). *Fostering the Minds of Young Canadians: Implications for Governments and NGOs*, accessed. In this report, the participants of the forum were only described as "representatives from federal government departments and non-governmental organizations (NGOs)." The CEA states that the report was prepared by the CEA on behalf of the Canadian Education Forum, but the opinions expressed in this report are not necessarily those of the CEA.
[240] Ibid., accessed. p. 2.
[241] Ibid., accessed. p. 1.
[242] Ibid., accessed. p. 3.
[243] Ibid., accessed.

environmental degradation, inequalities, access to basic services, and globalization give rise to the need for leaders, creative thinkers, and globally-aware citizens, are we underestimating the need for change in schools if our students are going to play an active part in shaping the twenty-first century?[244]

Douglas Stewart, emeritus Professor of Education of the University of Regina, seems to agree that becoming more conscious and aware involves training the mind, which includes the cognitive aspects of social, emotional, and moral development. Indeed, he proposes that these "dimensions of human development all are characterized as having a cognitive core. In the case of emotions, for instance, the cognitive core is associated with our appraisals of situations."[245]

Writing for the CEA, he reports that he compared the 2005 mission and goal statements of education departments in Canadian provinces and territories to determine their views on the purposes of public schooling.[246] He found enough commonality to place these goals into four broad categories concerning the individual, society, vocational preparation, and economic good:

1. *The good or wellbeing of the individual*: lifelong learning, development of individual potential intellectually, socially, emotionally, physically; self-esteem; healthful lifestyles; etc.
2. *The public good or the good of society*: good citizenship; commitment to democratic ideals; respect for law and legitimate authority; respect for cultural diversity; etc.
3. *Vocational preparation*: a skilled and adaptable workforce; technological literacy; etc.; and
4. *The economical good*: a competitive economy within a global market.[247]

Stewart mentions specifically that there are no or few references in the mission / goal statements that refer to "education," "national identity" or to "the care and concern for the natural environment." His principle concern is that the goals are not prioritized or used to develop a coherent conception of education. Nor is there any reference to the transformative sense of education, which Stewart sees as the heart of education:

I am drawing upon a conception of "education" as transformative and empowering. It is one that implies the development and enlargement of human consciousness or awareness of the world, of "seeing" or looking at the world with new and enriched perspectives that transcend the local and particular, and that

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[244] Ibid., accessed. pp. 1–2.
[245] Stewart. "Purposes of Public Education: Philosophical Reflections." p. 6.
[246] Ibid.
[247] Stewart. "Purposes of Public Education: Philosophical Reflections." p. 5.

enable individuals to achieve a greater meaning and sense of who they are and how they relate to the world.[248]

Stewart argues that social, vocational, and economic goals are secondary goals that will come out of an education that focuses on training the mind or developing "a differentiated consciousness." A more aware consciousness can be brought out through an understanding of the traditions or "conversations" found in the disciplines of "the natural sciences and technology, the human or social sciences, mathematical understanding, the expressive or fine arts and literature, moral capacity and understanding, philosophical reflection, and so on."[249]

The CEA forum report also calls for an education system that will broaden to include children learning in their communities; that will foster collaboration as opposed to competition; and will move from an emphasis on individual achievement to an education culture of community development and participatory democracy.[250]

This is the kind of broad "outcome" approach that fits and is appropriate to the GNH vision, goals, and objectives, and that will therefore be explored here. It is an approach that goes well beyond the standard Western educational goals, which may have limited relation to societal outcomes.

3.1 The distinction between education and schooling

There is a distinction to be made between "education" and "schooling." Education, in the early Latin sense, meant "to draw out" the essential humanity of the child.[251] In line with Buddhist thought, John Taylor Gatto, New York State Teacher of the Year and teacher in the public school system for twenty-five years, believes that genius is a common quality, natural to all of us, and children are completely endowed with insight, wisdom, justice, resourcefulness, courage, originality, and all the hallmarks of human excellence.[252] These qualities can be cultivated and "drawn out" rather than being "dumbed down" by the public education system, which Gatto believes is generally the case in the West.[253] These qualities also reflect the GNH values that are important to the Bhutanese, and to the

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[248] Ibid. p. 6.

[249] Ibid. pp. 6–7.

[250] Canadian Education Association (CEA). *Fostering the Minds of Young Canadians: Implications for Governments and NGOs*, accessed.

[251] Carpenter, Pam. *Wholistic Education: Drawing out the Human Potential*, School of Metaphysics, 2002; accessed March 2005; available from http://www.som.org/13secrets/Course/wholistic.htm.

[252] Gatto, John Taylor. *Dumbing Us Down: The Hidden Curriculum of Compulsory Schooling*, Philadelphia: New Society Publishers, 1992.

[253] Ibid.

sustainability of the planet. It is often observed that children who are truly cared for will learn to care for others—both living and nonliving, human and nonhuman.[254]

The concept of education is too frequently associated with "schooling." Education, however, involves learning, which takes place in the home and community, not just in school. Csikszentmihalyi posits:

> Whether or not children will learn does not depend primarily on what happens in school, but on the experiences, habits, values, and ideas they acquire from the environment in which they live […]. Knowledge of facts and how to interpret them will not result in an educated population unless some wisdom—or the goals and priorities that justify the use of knowledge—is also acquired."[255]

As Orr notes, "A landscape organized for the convenience of the automobile and trivial consumption tells young people more about our real values than anything taught in school."[256]

Learning how to learn in order to empower lifelong learners who continually "educate" themselves is considered by most educators today to be a primary goal of education. According to Donella Meadows, learning involves an attitude of openness, interest, and curiosity; an understanding of what one does not know; perseverance; an ability to see patterns and their connections to the larger whole; and a willingness to engage in personal and social transformation.[257]

Educator David Campbell describes his experience explaining the concept of lifelong learning to his students and their typical reactions:

> The one question that is never to be asked is this: 'What is the purpose of education?' We have an answer from John Dewey, who considered this and related questions at the beginning of this century. For Dewey, the goal of education was more education. When I announce this, the only true answer I can supply, my students become catatonic at the thought of endless courses, tests, grades, a lifetime grade-point average, and hundred-dollar textbooks filling their homes.
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> When I explain seriously to my students the idea of education as a lifetime of seamless experience, connecting individual episodes into an ever-expanding web of meaning, insight, and understanding, I note the fog that beclouds their eyes and

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[254] Wuthnow, R. *Learning to Care: Elementary Kindness in an Age of Indifference*, New York: Oxford University Press, 1995.

[255] Csikszentmihalyi, Mihaly. "Education for the Twenty-First Century," *Daedalus: Proceedings of the American Academy of Arts and Sciences*, vol. 124, no. 4, 1995: 107-114.

[256] Orr. *Ecological Literacy. Education and the Transition to a Postmodern World*.

[257] Meadows. *Indicators and Information Systems for Sustainable Development. A Report to the Balaton Group*, accessed.

enwraps their minds. (It's the same fog that I remember from my college calculus class.) When I tell them that I could never tolerate trading places with them and being 'instructed'; when I tell them that, since being awarded my 'terminal' degree, I have instructed myself in everything I consider to be significant; when I tell them that the process of self-instruction has been enjoyable, though it has consumed more time and energy than any graduate school could—only then, after this much-too-personal confession, do they begin to understand what the education is. Only then do they understand that a teacher can start an individual on the path toward education and can guide and support that person in a personal quest for education, but the quest is never finished. No subject is ever 'taken.' No degree, however 'terminal,' makes an education complete.[258]

Schooling, on the other hand, refers to the institutionalization of students in structures known as "schools," that may not have any relationship to the goals of education as described above. Mass schooling was invented in the nineteenth century, when children were removed from the adult world where they previously learned through apprenticeships and meaningful connections in their communities, and placed in an artificial world, where contact with adult role models was limited.[259] Credentials became a priority and "being schooled" prepared students for their roles in the new industrial society.

This schooling system has no end of critics who see the problems in formal education as systemic, i.e., arising from the system itself. The main criticisms are coming directly from the educators themselves. For example, John Taylor Gatto has been in the forefront of an "anti-school movement" with his groundbreaking book, *Dumbing Us Down*.[260] Today, he sees little change in the system since he began teaching.[261]

Gatto is appalled by the lack of joy and motivation of students toward learning that he sees in the school system. He argues that the structure of our school system and its hidden assumptions teach a set of lessons and values that contradict the goals of true education. Furthermore, he believes mass public schooling actually destroys communities, is designed primarily for crowd control, and teaches emotional and intellectual dependency, confusion, deception, indifference, class position, and a superficial and fragile, conditional self-esteem. The children in school, he contends, have almost no curiosity, cannot concentrate, are indifferent to the adult world, are cut off from the past and future, are cruel to each other, laugh at weakness, are uneasy with intimacy, are materialistic, and mask their timidity and passivity with surface bravado and aggressiveness.

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[258] Campbell, David. "The Socrates Syndrome: Questions That Should Never Be Asked," *Phi Delta Kappan: The Professional Journal for Education*, vol. 76, no. 6, 1995: 467-469.
[259] Cole, Nancy. "Conceptions of Educational Achievement," *Educational Researcher*, vol. 19, no. 3, 1990: 2-7.
[260] Gatto. *Dumbing Us Down: The Hidden Curriculum of Compulsory Schooling*.
[261] Gatto, John Taylor. *A Different Kind of Teacher: Solving the Crisis of American Schooling*, Albany, California: Berkeley Hills Books, 2002.

Gatto's argument is supported by indicators such as the number of children who are diagnosed with attention deficit hyperactivity disorder (ADHD) and given drugs such as Ritalin to enable them to sit still, concentrate, and stop looking out the window (if there is one).[262] There is also evidence of a growing problem of bullying in schools.[263]

Matt Hern, writing in the Canadian Education Association publication, *Education Canada,* expresses a very critical observation of schooling:

> Would anyone in their right mind argue that the best way for children to grow up and flourish is to be institutionalized six hours a day, five days a week, ten months a year, for twelve years of their youth? To spend the vast majority of their days confined to single rooms with thirty of their peers and one adult? To be force-fed material that neither they nor their teacher has had any significant role in choosing? To change activities at the sound of a bell? To swallow petty authority, testing, surveillance and monitoring as a way of life?[264]

Writing in 1971, Ivan Illich, in *Deschooling Society,* postulates that children are "schooled" to confuse teaching and conventional concepts of "education" with true learning.[265] One of the participants of the previously cited CEA forum "What is an Educated Canadian?" reported that the wise elder she considered the most "educated" person she knew actually told her "the more education you get, the stupider you get."[266] Educator David Orr notes that "we have all observed [the difference] between the highly schooled and heavily degreed fool, and a person lacking intellectual pedigree who lives with dignity, skill, intelligence, and magnanimity, qualities that stricty speaking, cannot be taught or measured."[267]

Douglas Campbell talks about "just in case" curricula, which is the common idea that students should learn a subject today, just in case they need it in the future.[268] Of course people who specialize in a particular field or have a particular talent or ability will need to know about those areas. He asks, however, how much of the information people learn in school do they actually use in their lives? In answering his own question based on the available evidence, he doesn't find much—maybe health and physical fitness, literacy, low-grade math skills, a bit of history. The rest, he suggests, can be used when watching television trivia game shows.

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[262] Malacrida, Claudia. "Medicalization, Ambivalence and Social Control: Mothers' Descriptions of Educators and ADD/ADHD," *Health: An Interdisciplinary Journal for the Social Study of Health, Illness and Medicine*, vol. 8, no. 1, 2004: 61-80.

[263] Bullying.org Canada Inc. *Bullying Resources in Canada*, 2005; accessed May 2005; available from http://www.bullying.org.

[264] Hern, Matt. "Pedagogical Hubris and the Search for the Good School," *Education Canada*, vol. 44, no. 3, 2004: 26.

[265] Illich, Ivan. *Deschooling Society*, New York: Harper & Row, 1971.

[266] Huget. *What Is an Educated Canadian?*

[267] Orr. *Ecological Literacy. Education and the Transition to a Postmodern World*.

[268] Campbell. "The Socrates Syndrome: Questions That Should Never Be Asked."

As we have seen, the conventional Western education system indicators are mainly "schooling" indicators that may well measure mainly how well students have managed to fit into a system that may have little to do with true learning as described above. They can tell us about short-term memory retention on tests and how many students are in school and how many have graduated. However, current indicators, which also indicate what is important in Western education curricula, convey little about what might be important to students or society as a whole.

3.2 Rethinking schooling: What do we need to know?

Many educators today, such as those participating in the CEA forums, are rethinking schooling and education and calling for different models of learning that engage students in learning that is relevant to them and offer opportunities for engaging them in the larger community. The concepts of "learning for life" and lifelong learning have become prominent in most educational goal statements at every level.

Rethinking schooling involves asking questions such as: "What is an educated person?" "What is a learning society?" and "What do we need to learn and know in order to realize our human potential, enhance wellbeing, and contribute to our communities and the world?" In other words, what is needed for children to flourish and develop wellbeing in their lives, and what is needed for society to flourish, to foster wellbeing in its citizens, and leave a healthy, sustainable world for future generations? Educator David Orr asks similar questions:

> What will people need to know to live responsibly and well in a finite world? What skills, abilities, values, and character traits will be useful and / or necessary for the transition ahead? What does sustainability imply for technology? Politics? Community design? Social structures? Economics? Values? What is the appropriate balance between the sciences, the social sciences, and the humanities? And between intellect, spirit, and practice? What do all of these imply for the substance and process of education? In short, what does the dawning awareness of planetary limits and interrelatedness of all life have to do with the way we define, direct, and transmit knowledge? No single answer can, or should, be given to such a large question. It is possible only to propose measures by which answers might eventually be judged.[269]

The question educators and others are increasingly asking is which knowledge, skills, and attitudes are most important for students to acquire and for the population to know. Jerry Gaff of the Association of American Colleges and Universities observes there is a general

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[269] Orr. *Ecological Literacy. Education and the Transition to a Postmodern World*. p. 133.

consensus among a wide body of commentators about what constitutes an educated person or society:[270]

- breadth of knowledge, especially in the natural sciences, social sciences, humanities, and arts
- capacity for lifelong learning
- abilities to analyze, communicate, and integrate ideas
- collaborative problem-solving skills
- effectiveness in dealing with values
- intercultural knowledge relating to diverse individuals
- proactive sense of responsibility for individual, civic, and social choices
- developing as individuals[271]

Perhaps one of the most inclusive statement concerning the goals of education comes from the U.N.:

> The goal of education is to make people wiser, more knowledgeable, better informed, ethical, responsible, critical and capable of continuing to learn. Education also serves society by providing a critical reflection on the world, especially its failings and injustices, and by promoting greater consciousness and awareness, exploring new visions and concepts, and inventing new techniques and tools. Education is also the means for disseminating knowledge and developing skills, for bringing about desired changes in behaviours, values and lifestyles, and for promoting public support for the continuing and fundamental changes that will be required if humanity is to alter its course, leaving the familiar path that is leading towards growing difficulties, and starting the uphill climb towards sustainability. Education, in short, is humanity's best hope and most effective means to the quest to achieve sustainable development.[272]

Our challenge is to identify indicators that assess progress towards these fundamental educational goals.

Robin Martin—speaking about the philosophy of John Dewey, who addressed the needs of an educated society at the beginning of the twentieth century—advances the need for education to be relevant to students and society:

- How interested are the students in subject matters and problems that are being focused on at this time (within the school, or within specific classrooms)?
- How are subject matters connected with the students' real world (including current social issues)?

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[270] Gaff. "What Is a Generally Educated Person?"
[271] Ibid.
[272] United Nations Educational Scientific and Cultural Organization (UNESCO). *Educating for a Sustainable Future: A Transdisciplinary Vision for Concerted Action*, accessed. p. 18.

- How well do the subjects (and related methods) allow students to live fully in the present?
- How does the subject matter prepare them for the future by critically dealing with the dilemmas of today?
- How do subject matters complement methods to encourage discipline? (Discipline, here, is developing continuous attention to a problem.)
- How do subject matters complement methods to encourage scientific / reflective thinking?
- How do subject matters encourage students in their play and work-as-play?[273]

We will be looking at these questions, and at possibilities for curricula that reflect these concerns, as we go through the various areas of this review.

3.3 Education for sustainability: the ultimate outcome

In 1992, 1,700 of the world's leading scientists, including the majority of Nobel laureates in the sciences, issued a dire warning to humanity, which began:[274]

> Human beings and the natural world are on a collision course. Human activities inflict harsh and often irreversible damage on the environment and on critical resources. If not checked, many of our current practices put at serious risk the future that we wish for human society and the plant and animal kingdoms, and may so alter the living world that it will be unable to sustain life in the manner that we know. Fundamental changes are urgent if we are to avoid the collision our present course will bring about.[275]

The Director of UNESCO's Education for Sustainable Development project, Gustavo López Ospina, quotes a well-known statistic and calls for a worldwide reduction in consumption among the wealthy: "Already 20% of the world's population consumes 86% of its total resources, while the poorest 20% of the population consume only 1.3% of these same resources."[276] From this perspective, education as it is currently practiced is not the answer, since those same people who have the money to consume are the ones

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[273] Martin, Robin Ann. *Accountability in Schools: What Would Dewey Say*, Paths of Learning, 2000; accessed March 2005; available from http://www.pathsoflearning.net/library/Dewey2000.cfm.
[274] Union of Concerned Scientists (UCS). *World Scientists' Warning to Humanity*, UCS, 1992; accessed April 2005; available from http://www.ucsusa.org/ucs/about/page.cfm?pageID=1009.
[275] Ibid., accessed.
[276] Ospina, Gustavo López. "Open File: Education for Sustainable Development. A Local and International Challenge," *PROSPECTS*, vol. XXX-1, no. 113, 2000; available from http://www.ibe.unesco.org/International/Publications/Prospects/ProspectsOpenFiles/pr113of1.htm.

with the highest educations, a correlation that is very easy to measure and establish.[277] In this case, from the perspective of sustainability, higher education, as it is currently practiced, may actually be counter-productive.

Echoing this perspective, David Orr stresses that all education needs to be "environmental education."[278] Conversely, the question may be asked—to what extent is our existing, conventional educational system, and what it teaches, contributing to the very crisis scientists identify? Environmental educators maintain that we need knowledge of ecological principles, knowledge of environmental problems and issues, environmental sensitivity and awareness, and knowledge or understanding of environmentally responsible behaviour.[279] For this, as Staniforth notes, we also need the three Cs—caring, connection, and concern.[280]

Ospina notes: "[T]he call for sustainable development is an alarm bell set off by the lack of respect for humane values in everyday life [… It] is perhaps more a moral precept than a scientific concept." His suggestion is:

> … to place a system of values and ethics at the centre of society's concerns […]. Success in the struggle for sustainable development requires an approach to education that strengthens our engagement in support of other values—especially justice and fairness—and the awareness that we share a common destiny with others.[281]

As noted in Chapter 1, the Center for Ecoliteracy lists the competencies, skills, values, and visions that are needed to put knowledge and wisdom into practice.[282] This holistic framework includes head, heart, hands, and spirit and places these elements within the realm of sustainability:

Head
- Ecological knowledge
- The ability to think systemically
- The ability to think critically, to solve problems creatively, and to applyenvironmental ethics to new situations

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[277] Orr, David W. *Earth in Mind. On Education, Environment, and the Human Prospect*, Washington, D.C.: Island Press, 1994.

[278] Orr. *Ecological Literacy. Education and the Transition to a Postmodern World*.

[279] Thomson, Gareth. *What Is Good Environmental Education? A Compilation of Charters, Declarations, Conceptual Frameworks, Models, Standards, and Guideline for Environmental Education*, Canadian Parks and Wilderness Society, 2002; accessed April 2005; available from http://www.cpawscalgary.org/education/network-environmental-education/whatisgoodee.pdf-.

[280] Staniforth, Sue. *Workshop: What Is Good Environmental Education?*, Canadian Parks and Wilderness Society, 2002; accessed April 2005; available from http://www.cpawscalgary.org/education/network-environmental-education/staniforth-lecture.pdf.

[281] Ospina. "Open File: Education for Sustainable Development. A Local and International Challenge."

[282] Center for Ecoliteracy. *Competencies*, accessed.

- The ability to assess the impact of human technologies and actions and to envision the long-term consequences of decisions

Heart
- A deeply felt, not just understood, concern for the wellbeing of the Earth and of all living things
- Empathy and the ability to see from and appreciate multiple perspectives
- A commitment to equity, justice, inclusivity, and respect for all people
- Skills in building, governing, and sustaining communities

Hands
- The ability to apply ecological knowledge to the practice of ecological design
- Practical skills to create and use tools, objects, and procedures required by sustainable communities
- The ability to assess and make adjustments to uses of energy and resources
- The capacity to convert convictions into practical and effective action

Spirit
- A sense of wonder
- A capacity for reverence
- A deep appreciation of place
- A feeling of kinship with the natural world, and the ability to invoke that feeling in others[283]

Again, consideration of the above qualities of an "educated populace" might be helpful in designing curricula for a Bhutanese educational system based on GNH values and principles.

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[283] Ibid., accessed.

PART II

LEARNING
WISDOM AND VALUES

4. Learning Wisdom

> *You have learned great pyramids of knowledge. But if that learning is not exercised through experience, it cannot be realized […]. Like most people, you don't experience with your whole self. That is the difference between knowledge and wisdom.*
>
> Agnes Whistling Elk[284]

> *What we need, for wisdom, is an interplay of skeptical rationality and emotion, an interplay of mind and heart, so that we may develop mindful hearts and heartfelt minds.*
>
> Nicholas Maxwell[285]

Some Western views of wisdom have much in common with Bhutanese GNH values and principles. Nicholas Maxwell, of the University of London, critiques standard Western education systems as trying to solve problems of knowledge rather than problems of living.[286] He boils down what we need to know into two categories reflecting the two great problems of learning confronting humanity:

1. We need to learn about the nature of the universe and about ourselves as part of the universe
2. We need to learn to live wisely.[287]

Wisdom, for Maxwell, is the capacity to discriminate what is valuable for oneself, society, and the ecosystem. It includes knowledge, understanding, and technological know-how. This knowledge and wisdom can be held by institutions, societies and cultures, as well as by individuals. Maxwell proposes that the basic aim of learning should be to promote wisdom rather than just to acquire knowledge, since knowledge without the wisdom to use it beneficially can be extremely dangerous, as seen in of its use for war and environmental damage.[288]

Wisdom is an elusive process of thinking and acting that defies measurement; at the same time, it is one of the most important aspects of lifelong learning that needs to be measured. Wisdom, generally, is considered as the "pinnacle of successful human

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[284] Whistling Elk, Agnes cited in Ardelt, Monika. "Intellectual Versus Wisdom-Related Knowledge: The Case for a Different Kind of Learning in the Later Years of Life," *Educational Gerontology*, vol. 26, 2000: 771-789. p. 771.

[285] Maxwell, Nicholas. "A Revolution for Science and the Humanities: From Knowledge to Wisdom," *Dialogue and Universalism*, vol. XV, no. 1-2, 2005: 29-57. p. 40.

[286] Maxwell. *Do We Need an Academic Revolution*, accessed.

[287] Maxwell. "Two Great Problems of Learning."

[288] Maxwell. *Do We Need an Academic Revolution*, accessed.

development."[289] It is a concept that consists of multidimensional qualities that are defined in multiple ways in the wisdom literature. Although researchers often emphasize one quality over another, there is a general consensus that wisdom is a lifelong process consisting of an amalgamation of knowledge and deep understanding.[290] It especially involves:

- an ability to think holistically, and to discern whether or not something is beneficial or harmful to oneself and society
- having openness, caring and compassion, and respect for all life forms
- having a commitment to action toward enhancing the common good,
- understanding that we are part of something larger than ourselves, and undergoing profound transformation, or increased integration, on both individual and societal levels.[291]

On the societal level, Baltes and Staudinger argue that "wisdom is fundamentally a cultural and collective product in which individuals participate. Individuals are only some of the carriers and outcomes of wisdom."[292] In addition, the consensus is that although wisdom is natural, it needs to be cultivated throughout all areas of society.[293] Otherwise, as Bassett notes, "there is no fostering of wisdom—only the haphazard achievement of it by certain lucky or gifted individuals."[294] Baltes also believes that wisdom is more than a utopian concept:

> [W]isdom in everyday life is something that can be achieved. Its benchmark is different from the utopian definition of wisdom that philosophers and religious scholars of the middle ages and the Enlightenment pursued. Wisdom is what the best of us, in our everyday worlds, do achieve. Wisdom in everyday life has a more or less quality, its threshold is not beyond reach.[295]

Ideally, a holistic education system, such as that planned by the Bhutanese, should include curricula that teaches and helps students learn what they actually need to know to enhance wellbeing, and to use the knowledge, which is being effectively generated, wisely for the public good in all areas of the ecosystem. This effective creation and use of knowledge for societal benefit would eventually include assessing the degree to which education and learning are influenced by GNH values, which in turn are crucial to enhance sustainability. For example, if knowledge is generated and transmitted in such a way that does not promote short-term personal gain, comfort, and advantage at the

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[289] Ardelt. "Antecedents and Effects of Wisdom in Old Age: A Longitudinal Perspective on Aging Well." p. 360, cited in Bassett. "Wisdom in Three Acts: Using Transformative Learning to Teach for Wisdom." p. 1.
[290] Bassett. "Wisdom in Three Acts: Using Transformative Learning to Teach for Wisdom."
[291] Ibid.
[292] Baltes, P.B., and U.M. Staudinger. "Wisdom: A Metaheuristic (Pragmatic) to Orchestrate Mind and Virtue toward Excellence," *American Psychologist*, vol. 55, no. 1, 2000: 122-136. p. 127.
[293] Sternberg, ed. *Wisdom. Its Nature, Origins and Development*.
[294] Bassett. "Wisdom in Three Acts: Using Transformative Learning to Teach for Wisdom." p. 3.
[295] Baltes. *Wisdom as Orchestration of Mind in Virtue*, accessed. p. 218.

expense of future generations and long-term societal and ecological needs, then this is an indication that the educational system is promoting sustainability.

Such a curriculum framework from a GNH outcome point of view, requires a broad view of wisdom that includes many elements of what is needed for sustainability and wellbeing. Below we examine in more detail the parameters of the term "wisdom," and in Chapter 5 the term "values," mainly which come from Western sources. It must be noted, however, that Bhutan has a long and profound history based on Eastern wisdom traditions, including those that come from centuries of Buddhist thought and meditation practices, and that have resulted in GNH values and principles. Thus, Bhutanese educators might have somewhat different, and possibly much deeper, perspectives on "wisdom" and "values" than those presented in the next two sections of this literature review from Western perspectives. Therefore, we humbly provide a few Western ideas concerning the subjects, including how some Western educators have suggested that wisdom and values could be measured within educational systems. In addition, we have not presumed to compare Western ideas with (our somewhat limited knowledge of) Bhutanese and Buddhist thought

4.1 Distinction between data, information, knowledge, and wisdom

In the view of Bellinger, Castro, and Mills, in order to understand, and ultimately measure, wisdom, a distinction first must be made between data, information, knowledge, and wisdom. [296] In the literature, the terms are more generally looked at as evolving processes, rather than as solid states. As psychology professor Tobin Hart notes: "Wisdom does not come from amassing bits of information; it is not a thing that's accumulated, not an *entity*. Instead it is an *activity* of knowing. We don't possess wisdom as if it were an object, instead we act wisely."[297]

The following brief summary, adapted from Bellinger, Castro, and Mills, represents that understanding and view of wisdom:[298]

Data are raw symbols that can be useable or not, which have no significance outside a specific context. Data can represent a statement of event without relationship to anything. For example, the statement, "It is raining" can be an expression of raw data.

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[296] Bellinger, Gene, Durval Castro, and Anthony Mills. *Data, Information, Knowledge, and Wisdom*, The Way of Systems, 2004; accessed March 2005; available from http://www.systems-thinking.org/dikw/dikw.htm.

[297] Hart, Tobin. "Teaching for Wisdom," *Encounter: Education for Meaning and Social Justice*, vol. 14, no. 2, 2001: 3-16. p. 3.

[298] Bellinger, Castro, and Mills. 2005.

Information is data that has been put into a useful and meaningful context by the understanding of the person perceiving the data. It provides answers to "who," "what," "where," and "when," and contains the idea of *relationship*. For example, the statement, "the temperature dropped 15 degrees and then it started raining" provides information and data but is not considered knowledge *per se,* since it is still a "bundle of facts."

Knowledge represents the recognition and understanding of *patterns* and their connections and is more than the collection of information. "Knowledge packages" organize, integrate, and contextualize information. Knowledge can answer the question "how." For example, knowledge is needed in order to make the following statement: "If the humidity is very high and the temperature drops substantially, the atmosphere is often unlikely to be able to hold the moisture, so it rains."[299]

Information, as structured data, is useless until those with the ability to interpret, understand, and process the information transfer it into knowledge.[300] According to Cafer Yaran, knowledge, based on the understanding of patterns, comes from a combination of reasoning, use of sense perceptions, and intuition.[301] Knowledge also implies empowerment for action. The terms knowledge and information are often used interchangeably in the literature without making these important distinctions.

Wisdom, according to Bellinger et al., is a process of building on knowledge to reach an understanding of underlying principles. The non-normative example of wisdom given by Bellinger et al. is: "It rains because it rains. And this encompasses an understanding of all the interactions that happen between raining, evaporation, air currents, temperature gradients, changes, raining."[302] The system cycles from raining back to raining again and forms a complete whole. Bellinger, et al. state that wisdom essentially involves a holistic, systemic, integration of the physical body, cognitive abilities of the mind, and compassion of the heart. It embodies the values and clarity to see "the big picture," the capacity to relate knowledge about particular conditions and situations to larger goals and wider purposes, and the ability to act on this wisdom for the common good.

Perhaps most importantly, from a practical point of view, wisdom is seen as including abilities—to discriminate the beneficial from the non-beneficial, to understand which actions will create benefit and which will produce harm, and to use this knowledge to act for the benefit and wellbeing of all. According to these criteria, it clearly requires wisdom to distinguish trends and actions that will deepen and enhance wellbeing from those that undermine wellbeing. Wisdom, in short, is essential to define and measure "progress."

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[299] Ibid., accessed.
[300] David, Paul A., and Dominique Foray. "Economic Fundamentals of the Knowledge Society," *Policy Futures in Education*, vol. 1, no. 1, 2003: 20-49.
[301] Yaran, Cafer S. *The Historical Dialogue of Knowledge and Wisdom and Contemporary Need for a "Sophialogical" Epistemology*, Samsun, Turkey, Samsun, Turkey: University of Ondokuz Mayis, 2003; accessed March 2005; available from http://www.livejournal.com/community/sbulgakov/17623.html.
[302] Bellinger, Castro, and Mills. *Data, Information, Knowledge, and Wisdom*, accessed.

Understanding is the factor that connects all four concepts—data, information, knowledge, and wisdom—and allows the creation of new knowledge and wisdom. According to Bellinger et al., the four concepts are related hierarchically, with understanding supporting the transition from each stage to the next. Understanding, it is important to note, involves more than intellectual ability. As Hart records, understanding literally means, "to stand among as opposed to apart from."[303] In order to understand, to stand among, one needs an empathetic connection with the system one is trying to understand.

In addition, this data-wisdom process is directly connected and analogous to the learning process in general, which also involves cognition and knowledge, reflection, and integration of deeper levels of understanding.[304]

Figure 6 below represents the data-wisdom dynamic:

Figure 6. Data—Wisdom hierarchy
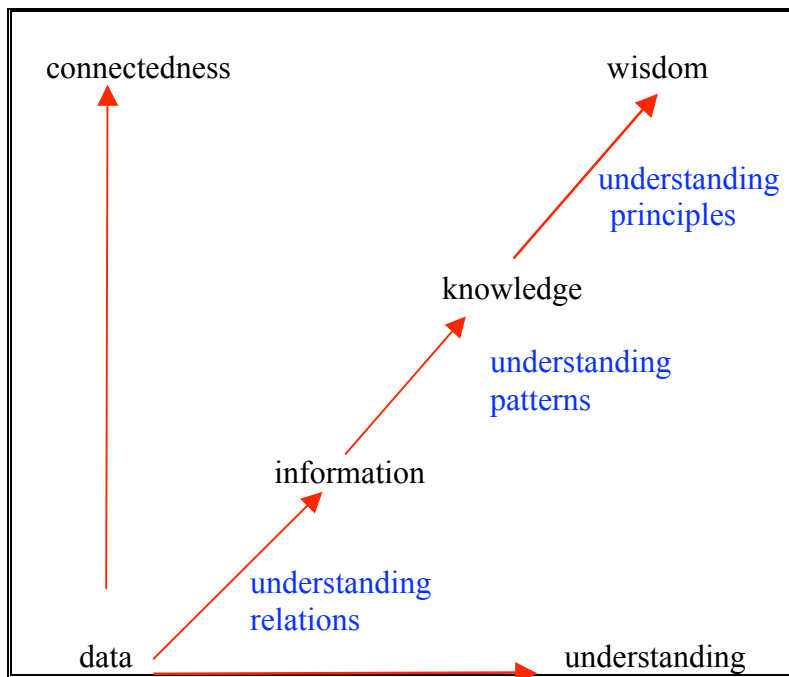
Source: Bellinger, Gene, Durval Castro, and Anthony Mills. *Data, Information, Knowledge, and Wisdom*, The Way of Systems, 2004; accessed March 2005; available from http://www.systems-thinking.org/dikw/dikw.htm.

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[303] Hart. "Teaching for Wisdom." p. 15.
[304] Cornford, Ian R. "Learning-to-Learn Strategies as a Basis for Effective Lifelong Learning," *International Journal of Lifelong Education*, vol. 21, no. 4, 2002: 357-368.

Most conventional education indicators (and perhaps most formal educational systems) do not make these important distinctions or explore this hierarchy systematically. Indeed, some testing mechanisms rarely go beyond the information stage, and almost no criteria of educational attainment incorporate the highest (wisdom) stage.

4.2 Wisdom as a key learning outcome

Learning to live wisely, according to Maxwell, is more than accumulating facts. It also involves values and clarifying conflicting aims concerning what is desirable and for whom, and what is necessary to solve the "problems of living."[305] He reasons:

> It is clear, at once, that values are involved, quite essentially: what is "legitimate" and "desirable" involves questions of value, and moral and legal questions. This is equally true of any proposed solution to a problem of living, a proposed action, policy, plan, political philosophy, piece of legislation. In putting such a thing forward as a proposed solution to a problem of living, value-judgements, of one kind or another, will invariably be involved. A kind of inquiry that restricts itself to the pursuit of factual knowledge excludes values from the intellectual domain of inquiry, and must, therefore, exclude representations of problems of living, and proposals for their resolution […]. [Such proposed solutions] are proposals for action, not claims to knowledge; they involve an admixture of values and facts, ideals and methods, and none of this is acceptable or rational, according to the intellectual standards of knowledge-inquiry […]. Possible solutions to problems of living simply do not qualify, however practical, effective, desirable, intelligent and wise they may be.[306]

As an example, Maxwell examined 34 university introductory sociology textbooks published between 1985 and 1997 to see if they discussed whether an aim of sociology was to help people solve social problems of living. He found statements that defined sociology as a scientific study of human societies having an aim of understanding human society, but he did not find statements concerning solving problems of living nor of the aim of inquiry being to promote personal, social and global wisdom.[307] British educator Bruce Lloyd also notes that history is often taught in a way that glorifies the past, rather than asking what wisdom we can learn from it.[308]

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[305] Maxwell. "A Revolution for Science and the Humanities: From Knowledge to Wisdom."
[306] Ibid. p. 36.
[307] Ibid. p. 37.
[308] Lloyd, Bruce. "The Wisdom of the World: Messages for the New Millennium," *The Futurist*, vol. 34, no. 3, 2000: 42-46.

Since it involves the whole of life, wisdom cannot be reduced to single actions. Gustavsson notes that wisdom starts as "we train our ability of discernment."[309] If we define a positive outcome as something that is beneficial to the wellbeing and sustainability of the planet in all its multidimensional forms, then we must be able to know what is beneficial and what is not. Often this is clear—we can know without being an expert that the air is polluted when we see deposited soot and have trouble breathing. But in the overlapping, "fuzzy" areas (a technical term)[310], we need knowledge based on practical wisdom, such as the value of sustainability, for practical guidance.

Problems in society are complex, interdependent, uncertain, unpredictable, and changing at a rapid speed. According to Gustavsson, these problems can be traced, in part, to information- and biological- technology—both of which the average person knows very little about.[311] Maxwell argues that "the crisis of our times is that we have science without wisdom."[312] According to Maxwell, "science as such is not the problem, but rather science dissociated from the pursuit of wisdom."[313] In other words, it is what we *do* with the knowledge made possible by science and technology, rather than the knowledge itself, that is the problem. Maxwell notes that science and technology have increased expert knowledge and understanding at an "ever accelerating rate," and have produced many benefits including increasing "our power to act." However, the current state of the global ecosystem illuminates the fact that this knowledge has also produced harm, whether intended or not. Maxwell notes that problems of living include areas such as:

> Population growth, the terrifyingly lethal character of modern war and terrorism, immense discrepancies of wealth across the globe, annihilation of indigenous people, cultures and languages, impending depletion of natural resources, destruction of tropical rain forests and other natural habitats, rapid mass extinction of species, pollution of sea, earth and air, thinning of the ozone layer, global warming […]: all these relatively recent crises have been made possible by modern science and technology.[314]

In his book, *Why Smart People Can Be So Stupid,* Sternberg points to a lack of association between education and wisdom.[315] He notes that some of the most highly educated people have been responsible for global catastrophes. Many of the top-ranking

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[309] Gustavsson, Bernt. "What Do We Mean by Lifelong Learning and Knowledge," *International Journal of Lifelong Education*, vol. 21, no. 1, 2002: 13-23.

[310] "Fuzzy logic is a method for understanding, quantifying, and dealing with vague, ambiguous and uncertain characteristics, ideas and judgements." Dimitrov, Vladimir. *Use of Fuzzy Logic When Dealing with Social Complexity*, Complexity International, 1997; accessed June 2005; available from http://www.complexity.org.au/ci/vol04/dimitrov1/dimitrov.htm. p. 9.

[311] Gustavsson. "What Do We Mean by Lifelong Learning and Knowledge."

[312] Maxwell. *Do We Need an Academic Revolution*, accessed.

[313] Maxwell, Nicholas. *From Knowledge to Wisdom: The Basic Argument*, 2005; accessed January 2006; available from http://www.nick-maxwell.demon.co.uk/basic_arg.htm.

[314] Maxwell. *Do We Need an Academic Revolution*, accessed. p. 1.

[315] Sternberg, ed. *Why Smart People Can Be So Stupid*.

Nazis, for example, had doctoral degrees; many highly paid and highly educated business executives have exploited the public; many scientists have produced instruments of destruction; and many international terrorists are also highly educated. Unfortunately, examples of expert knowledge used in ways that are unaccompanied by wisdom are seen far too often in their contribution to social upheavals and environmental degradation.

Conversely, the question may be asked—to what extent is our existing, conventional educational system, and what it teaches, actually contributing to these crises? Researchers such as Jeffery Webster, who has developed a Self-Assessed Wisdom Scale (SAWS), which we discuss below, have found no association between wisdom and education.[316] Webster suggests:

> [T]he types of noncognitive skills and competencies measured by the SAWS are not the ones learned in formal academic training; learning the date for the battle of the Plains of Abraham, or that the square root of 144 is 12 seemingly play a limited role in the development of emotional regulation, openness, reminiscence, and the other dimensions assessed by the SAWS.[317]

While Maxwell argues:

> In order to learn how to become wiser we need traditions and institutions of learning rationally designed to help us learn wisdom. This at present we do not have. Academic inquiry as it exists at present, devoted primarily to the pursuit of knowledge and technological know-how, is grossly and damagingly irrational when assessed from the standpoint of helping humanity acquire wisdom—wisdom being the capacity to realize what is of value for oneself and others (and thus including knowledge, understanding and technological know-how).[318]

Robert Sternberg, professor of psychology and education at Yale University and director of its Center for the Psychology of Abilities, Competencies, and Expertise (PACE), writes often of the need to teach students to think wisely and is developing a program to teach wisdom to middle school students in the U.S.[319] According to Sternberg, increased academic skills may be important, but students also need the ability to use knowledge for beneficial purposes and the common good. In fact, Sternberg argues directly: "People are wise to the extent that they use their intelligence to seek a common good."[320] He emphasizes that the goal of his Center is not to teach values but to help students develop positive values of their own that promote social welfare. Students' self-interests need to be balanced with larger interests of community, country, and the world. According to

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[316] Webster, Jeffrey Dean. "An Exploratory Analysis of a Self-Assessed Wisdom Scale," *Journal of Adult Development*, vol. 10, no. 1, 2003: 13-22.

[317] Ibid. p. 20.

[318] Maxwell. *Do We Need an Academic Revolution*, accessed.

[319] Sternberg, Robert J. "Why Schools Should Teach for Wisdom: The Balance Theory of Wisdom in Educational Settings," *Educational Psychologist*, vol. 36, no. 4, 2001: 227-245.

[320] Sternberg, ed. *Why Smart People Can Be So Stupid*.

Sternberg, being wise also includes humility. "Teaching for wisdom means helping students to know what they know, but also to know what they do not know, and even, at a given point of time, cannot know."[321]

Robert Thurman of Columbia University declares that we need education for wisdom, but that the university does not give a fundamental academic role to its realization or place in interactions with the larger world. In the university "what we do is try to liberate critical intellect, emotional stability, aesthetic sensitivity, and moral decency […]. [However,] people are informed and certified but not properly prepared to exercise the responsibilities humanism imposes on the individual."[322]

Likewise, Maxwell notes: "Education needs to change so that problems of living become more fundamental than problems of knowledge, the basic aim of education being to learn how to acquire wisdom in life."[323] However, Maxwell does not argue that academic thought alone can solve the problems of living. Responsibility rests with everyone, including the political and civic sectors, to move society toward lifelong learning and wisdom—a goal, which Maxwell claims, is entirely realizable and practical.[324] Academic inquiry, however, according to Maxwell, does need "to be communicating with, learning from, teaching and arguing with the rest of society—in such a way as to promote cooperative rationality and social wisdom."[325]

Gustavsson suggests that practical wisdom is the most important outcome or manifestation of knowledge.[326] Practical wisdom, also known as normative knowledge or value-based knowledge, is linked to political and ethical action and is an end in itself and the purpose of action. In the normative area we may ask questions like: what happens to natural resources when material gain is valued over ecosystem sustainability? Without practical wisdom, Gustavsson argues, expert and technical knowledge is not sustainable since "this efficiency and concentration on […] rationality kicks back on the system as the life-world withers away," as seen in a myriad of social, economic, and environmental problems. Practical wisdom, in this context, is knowledge with the purpose of wellbeing, a good quality of life, and all that this implies. In this case, knowledge is not knowledge *for* wellbeing. It is knowledge, or wisdom, *as* wellbeing.

Tom Atlee, founder and co-director of the U.S.-based non-profit Co-Intelligence Institute, is concerned with discovering a way of thinking about wisdom that could help evaluate the wisdom of "decisions, actions, policies, leaders, and so on," since, "as the scope and

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[321] Ibid.

[322] Thurman, Robert A. F. *Meditation and Education: Buddhist India, Tibet and Modern America*, Pocantico, NY, Meeting of the Working Group, The Contemplative Mind in Society, 1994; accessed January 2006; available from http://www.contemplativemind.org/programs/academic/thurman.pdf.

[323] Maxwell. "A Revolution for Science and the Humanities: From Knowledge to Wisdom." p. 29.

[324] Maxwell, Nicholas. "In Defence of Seeking Wisdom," *Metaphilosophy*, vol. 39, 2004: 733-743.

[325] Maxwell. "A Revolution for Science and the Humanities: From Knowledge to Wisdom." p. 51.

[326] Gustavsson. "What Do We Mean by Lifelong Learning and Knowledge."

complexity of our world's problems grow, so grows our need for wisdom."[327] He explores the concept of wisdom by first noting that when people talk about wisdom, they often do so using metaphors related to sight, such as: "insight, foresight, discernment, farsightedness, brilliance, reflection, illumination, enlightenment, visionary and seer. The owl, often a symbol of wisdom, has prominent eyes that see clearly in the dark, and seem to be watching everything with penetrating attention." This relates to extending seeing beyond appearances into a deeper level of life. Atlee suggests indicators of wisdom are seen in our actions and attitudes, and that we are wise when we extend our seeing in the following ways:

- into the future to the consequences of our present actions—and [when we] learn from reflecting on those consequences, especially before we act
- beyond the clamour of this moment's shallow desires and immediate demands and opportunities, to understand and care for our deeper, longer-term needs
- beyond current events—both personal and collective—back into the history behind those events, and forward into possible futures
- beyond our personal view—and beyond the dominant view of our group or culture—to hear and understand the views of others.
- beyond convenient labels and judgments, to see things more as they are, which is always beyond labels and judgments—and even beyond words
- beyond isolated facts and linear logic into the whole fabric of life, using all the forms of knowing that are given to us, particularly intuition, heart, synthesis, spiritual experience, and the sciences that attempt to appreciate the whole and our relationship to it.[328]

In particular, Atlee argues that it is wise to see beyond the dichotomies dictated by our culture, our language, and our preferences. Good and bad, order and chaos, individual and collective, you and me, simplicity and complexity—these tantalizingly useful distinctions hide the fact that reality, in all its dynamic wholeness, embraces both sides of every dichotomy.

Perspectives of cultivating knowledge and wisdom as wellbeing, as expressed by Gustavsson and others, are important elements that could be incorporated into the framework, structure, and curriculum selection of a GNH-based education system. Sadly, few conventional Western educational systems incorporate this perspective or distinguish between individual success—as generally measured by standardized test results, graduation rates, and employment and financial statistics—and societal wellbeing.

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[327] Atlee, Tom. *Some Ways We Can Be Wise*, The Co-Intelligence Institute, 2003; accessed November 2005; available from http://cii.best.vwh.net/WisdomWays.html.
[328] Ibid., accessed.

4.3 An "emergent" wisdom framework

Table 3 below was adapted from the work of Carolyn Bassett, director of the U.S.-based Wisdom Institute and professor of transformative learning.[329] It represents a comprehensive framework for main dimensions of wisdom, and perhaps comes closer to the holistic GNH view than other systems, which emphasize some dimensions of wisdom over others.[330] Although Bassett represents the framework for the development of wisdom in the individual, it is equally valid for a larger-scale societal framework.

Bassett calls her approach to wisdom "emergent" and explains: "the term 'emergent' refers to a phenomenon where the whole is smarter than the sum of its parts, where simple (or relatively simpler) component parts interact, and from this interaction some higher level of structure or intelligence appears."[331] Emergent wisdom, then,

> … understands the biosphere from a systems point of view where people strive to contribute to the common good, which is the continuation of the larger whole in a way that respects all life forms and what sustains and supports them. In this perspective, emergent problem-solving requires a more sophisticated understanding of the world, that includes paradox and dialectical thinking, in comparison to linear cause-and-effect thinking or the outcomes models frequently used, for example, in educational assessment and organizational management. Thinking like this necessitates transformative learning, among other means, for bringing about a complexity of mind that encompasses a sense of interdependence and contributions to the common good, rather than standing outside of it for personal gain.[332]

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[329] Bassett. "Wisdom in Three Acts: Using Transformative Learning to Teach for Wisdom." p. 5.
[330] See for example: Baltes, and Staudinger. "Wisdom: A Metaheuristic (Pragmatic) to Orchestrate Mind and Virtue toward Excellence." and Sternberg, ed. *Wisdom. Its Nature, Origins and Development*.
[331] Bassett. "Wisdom in Three Acts: Using Transformative Learning to Teach for Wisdom." p. 2.
[332] Ibid. p. 2.

Table 3. Dimensions of wisdom

WISDOM				
Dimension	**Discerning** (Cognitive) Learning to Know	**Respecting** (Affective) Learning to Live Together	**Engaging** (Active) Learning to Do	**Transforming** (Reflective) Learning to Be
Chief Characteristic	Objectivity	Openness	Involvement	Integrity
Proficiency (or skilled behaviours)	Insight Holistic thinking, systemic seeing into complexity Balanced interests [self, other people, and institutions, such as organizations, community, and nations] [Discriminating what is beneficial and harmful for the common good and able to see the larger view in its context.]	Multiple perspective-taking Compassion and caring / empathy / love Generosity of spirit / non-judgmental [Orientation toward collective rather than individualistic interests only]	Sound judgment and adept decision-making Actions based on determinations of fairness and justice [including sustainability] Moral courage	Self-knowledge Self-acceptance Perspective on self as part of systems [Appreciation of lifelong / lifewide learning]
Manifestation	Deep understanding of fundamental patterns and relationships	Sense of gratitude/ Expanded sphere of consideration	Committed action for the common good	Embracing of paradox and uncertainty Ability to see beyond the self Growing recognition of inter-dependence

WISDOM				
Dimension	**Discerning** (Cognitive) Learning to Know	**Respecting** (Affective) Learning to Live Together	**Engaging** (Active) Learning to Do	**Transforming** (Reflective) Learning to Be
Developmental Stimulus / Sample Learning Prompts	What's really going on? What's true? What's important? What's right?	Whose point of view am I taking? How does someone else understand reality? How can I relate to others with magnanimity?	What guides my actions? To what ends are my actions directed? What means do I use?	What are my values? How do I live them? Who or what is the "I" that I think I am? What am I part of?

Source: Adapted from: Bassett, Caroline. "Wisdom in Three Acts: Using Transformative Learning to Teach for Wisdom." Paper presented at the Sixth International Transformative Learning Conference, Michigan State University, Oct. 6–9, 2005.

Table 3 above displays the main dimensions of wisdom; the chief characteristics of each dimension; the proficiencies or behaviour needed; and examples of the manifestation of wisdom. The interconnected dimensions of wisdom used in the framework table are: *discerning*, which is a mental, cognitive function; *respecting*, which is a feeling-level, affective function; *engaging*, which is an action-oriented function; and *transforming*, which is a reflective function. According to Bassett, for wisdom to manifest, all four of these dimensions must be present and must work together. For example, it is not enough to be able to think holistically and be able to discern whether or not something is beneficial or harmful in order to manifest wisdom. It is also important to genuinely care in an open and compassionate way for all living systems, to have a commitment to action for the common good, and to experience oneself as an integral part of the larger world.

In addition, Basset includes questions for each dimension that she uses in transformative learning classes to encourage student contemplation. She asserts that the kind of thinking represented reflects a shift "from simple to complex, from 'I am a good person' to 'I am complicit,' [and] from independence and individualism to interdependence."[333] This type of thinking, Bassett notes, is associated with a "decentering of the ego and the ability to think dialectically, wherein an individual is able to integrate various aspects of the psyche and accept inherent contradictions and alternate truths."[334]

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[333] Ibid. p. 2.
[334] Ibid.

Interestingly, the four dimensions of wisdom on the chart correspond directly to the four elements of the Delors[335] framework—learning to know, learning to live together, learning to do, and learning to be—that we have incorporated into the basic education framework for this literature review, and that were introduced above.

4.4 Western empirical research into wisdom

Western empirical research into wisdom has been ongoing for the past few decades, especially in the field of psychology, and has focused mainly on its cognitive-behavioural-analytical features in order to further elaborate the definition of wisdom.[336] Measures of wisdom to date have mainly been developed in relatively small, research-type settings that use labour-intensive and complicated methods involving lengthy interviews (of up to two hours per study participant) and rating procedures, rather than in large-scale surveys.[337] These studies often use proxies for wisdom as measured through widely-used psychological instruments such as the Vocabulary and Similarity subtests of Wechsler Adult Intelligence Scale—Revised, the Life Satisfaction Index-Z, the revised INDividualism / COLlectivisism Scale (INDCOL-CF) (which we look at later in this report),[338] the George Washington Social Intelligence Test; and the Social Insight Test.[339] However, there is enough credible research to lead toward the possibility of creating societal scale measures, as will be described below.

Empirical research on wisdom, as Brown and Greene outline, can be grouped into three categories: implicit theories, which measure how the general public perceives wisdom; explicit, expert theories, which analyze wisdom-related performance; and latent factor analysis, which attempts to measure wisdom indirectly using survey methods, rather than attempting to measure wisdom-related performance.[340] The constructs of wisdom we defined in the two sections on definitions and needs for wisdom above have been generated from the results of both implicit and explicit research on wisdom. The third, latent factor analysis, is related to survey measures of wisdom, which is the area most useful to indicator development. Here we look briefly at all three categories. The first two categories, implicit and explicit theories and measures of wisdom, provide a framework

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[335] Delors. *Learning: The Treasure Within. Report to UNESCO of the International Commission on Education for the Twenty-First Century*.

[336] Sternberg, ed. *Wisdom. Its Nature, Origins and Development*.

[337] Baltes, and Staudinger. "Wisdom: A Metaheuristic (Pragmatic) to Orchestrate Mind and Virtue toward Excellence."

[338] Takahashi, Masami, and Willis F. Overton. "Wisdom: A Culturally Inclusive Developmental Perspective," *International Journal of Behavioral Development*, vol. 26, no. 3, 2002: 269-277. p. 273.

[339] Sternberg, Robert J. "Implicit Theories of Intelligence, Creativity, and Wisdom," *Journal of Personality & Social Psychology*, vol. 49, no. 3, 1985: 607-627.

[340] Brown, Scott C., and Jeffrey A. Greene. "The Wisdom Development Scale: Translating the Conceptual to the Concrete," *Journal of College Student Development*, vol. 47, no. 1, 2006: 1-19.

within which wisdom can be evaluated and from which the third, survey-related, category is derived.

4.4.1 Implicit theories and measures of wisdom

Research into implicit theories of wisdom is concerned with how ordinary people perceive wisdom, and results of these studies have identified the qualities that the general public most often associate with wisdom. As Staudinger, Lopez, and Baltes note, "So far, most of the empirical work has centered on subjective and everyday conceptions of what constitutes wisdom and the expected characteristics of a wise person."[341] It has asked people from all walks of life, as well as from different cultures, about their ideas concerning wisdom and has found a remarkable consistency among responses. Brown and Greene note that there is enough evidence to suggest that wisdom is a distinct, subjective term in laypersons' minds separate from concepts such as intelligence and creativity.[342] Kramer argues that results of wisdom measures to date find that "there is a distinct, perceptible quality of 'wisdom' that can be identified reliably and maps onto existing measures of wisdom."[343]

Robert Sternberg and his colleagues at the Yale University Center for the Psychology of Abilities, Competencies, and Expertise (PACE Center) are pioneers in researching mainly implicit concepts of wisdom.[344] They argue that it is important to know people's implicit understanding of wisdom since these theories are used to guide their daily lives and judge the wisdom of others. Sternberg notes, "Indeed, very few judgments of wisdom have been and probably ever will be based on formal tests. Rather, they are based on our informal interactions with people."[345] In a related article, Sternberg argues, "[M]any educational programs […] stress the acquisition of knowledge but not how such knowledge will be used. The high-stakes testing movement, for example, seems to emphasize knowledge acquisition much more than the socially desirable use of that knowledge."[346]

Sternberg and his colleagues at the PACE Center have developed measurements of wisdom-related skills and judgment based on both explicit and implicit, or tacit,

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[341] Staudinger, U. M., David. F. Lopez, and P. B. Baltes. "The Psychometric Location of Wisdom-Related Performance: Intelligence, Personality, and More?," *Personality & Social Psychology Bulletin*, vol. 23, no. 11, 1997: 1200-1214. p. 1200.

[342] Brown, and Greene. "The Wisdom Development Scale: Translating the Conceptual to the Concrete."

[343] Kramer, Dierdre A. "Wisdom as a Classical Source of Human Strength: Conceptualization and Empirical Inquiry," *Journal of Social and Clinical Psychology*, vol. 19, no. 1, 2000: 83-101. p. 91.

[344] Sternberg, ed. *Wisdom. Its Nature, Origins and Development*.

[345] Sternberg, Robert J. "Words to the Wise About Wisdom?," *Human Development*, vol. 47, no. 5, 2004: 286-289. p. 288.

[346] Sternberg, Robert J. "It's Not What You Know, but How You Use It: Teaching for Wisdom," *The Chronicle of Higher Education*, vol. 48, no. 42, 2002: B20.

knowledge.[347] In order to measure wisdom, the Sternberg group devised a series of 24 life problems that contain conflict-resolution scenarios, moral judgment problems, and personal dilemma problems, which all include multiple interests. Participants are asked questions based on these life situations and given a list of possible options for dealing with the situations. They must rate the goodness of each of the options on a Likert scale ranging from 1 (low) to 9 (high). Responses are evaluated based on the following criteria (described more fully below):

1. Demonstration of attempt to reach a common good.
2. Balancing of intrapersonal, interpersonal, and extrapersonal interests.
3. Taking into account both short-and long-term factors.
4. Justification for adaptation to, shaping of, and selection of environments.
5. Mindful use of values.
6. Overall quality (wisdom) of process of solution.
7. Overall quality (wisdom) of the solution itself.[348]

Sternberg and his colleagues are validating this methodology, in part, in a pilot program teaching wisdom-related skills to middle school students in the U.S. Results of this program had not been released as of May 2006.[349]

One of Sternberg's most important and basic findings is that: "People are wise to the extent that they use their intelligence to seek a common good."[350] In his "balance theory of wisdom," Sternberg formally defines wisdom as follows:

> [W]isdom is the application of intelligence, creativity, and knowledge to the common good by balancing intrapersonal (one's own), interpersonal (others'), and extrapersonal (institutional or other larger) interests over the long and short terms, through the mediation of values, so as to adapt to, shape, and select environments.[351]

Wisdom, for Sternberg, then is seen in the interaction between an individual and the situational context. Balancing of interests includes three possible courses of actions, which involve either adapting to an existing situation or environment, changing oneself or the situation to be more compatible with the interests involved, or, when the first two possibilities are not feasible, selecting the environment. By "selecting the environment,"

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[347] Sternberg. "Why Schools Should Teach for Wisdom: The Balance Theory of Wisdom in Educational Settings."
[348] Ibid. p. 241.
[349] Sternberg, Robert J. *Website*, Yale University, accessed May 2006; available from http://www.yale.edu/rjsternberg/.
[350] Sternberg. "It's Not What You Know, but How You Use It: Teaching for Wisdom."
[351] Sternberg. "Words to the Wise About Wisdom?" p. 287.

Sternberg means selecting a new situation, "leaving, for example, a job, a community, a marriage, or whatever."[352]

Wisdom is also associated with values oriented toward achievement of the common good, and behaviour results from what is valued in a societal-cultural context. Sternberg notes: "What constitutes appropriate balancing of interests, an appropriate response to the environment, and even the common good, all hinge on values. Values, therefore, are an integral part of wise thinking."[353] Sternberg does not dictate which specific values are needed since the point is *how* to think for wisdom-related action, rather than *what* to think.

Tacit knowledge

In Sternberg's studies, wisdom is associated with a combination of both formal and tacit knowledge, although tacit knowledge forms the core of wisdom.[354] Formal knowledge in this case may include the recorded teachings of great thinkers and wisdom holders of the past, while tacit knowledge requires the experiential incorporation and application of this formal knowledge in the life experience of the individual. According to David and Foray, expert, recorded, bodies of knowledge can be either genuine knowledge, or just information, depending in part on the user, but this type of knowledge is generally missing the tacit component and so cannot be complete.[355] As Sternberg notes, "Wisdom requires knowledge, but the heart of wisdom is tacit, informal knowledge of the kind learned in the school of life, not the kind of explicit formal knowledge taught directly in schools."[356]

Tacit knowledge is often called "informal" knowledge, since it consists of the beliefs and understanding learned from life experience rather than from a formal curriculum.[357] Colloquially, it is called "street smarts," which distinguishes it from "book smarts," or academic knowledge. Tacit knowledge is practically useful and helps transfer explicit knowledge learned in a formal setting to life situations that are related to but different from the formal context. For example, one might study non-violence as practiced by Gandhi, but would need tacit or informal knowledge to understand how to apply non-violence in one's daily life. Tacit knowledge is often unrecognized by the person embodying it, and is not easy to articulate. This is the type of knowledge gained from apprenticeships, as the student learns from watching, listening, and imitating.[358] Also,

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[352] Sternberg, Robert J. "A Balance Theory of Wisdom," *Review of General Psychology*, vol. 2, no. 4, 1998: 347-365. p. 356.
[353] Sternberg. "Why Schools Should Teach for Wisdom: The Balance Theory of Wisdom in Educational Settings." p. 231.
[354] Sternberg. "A Balance Theory of Wisdom."
[355] David, and Foray. "Economic Fundamentals of the Knowledge Society."
[356] Sternberg. "Why Schools Should Teach for Wisdom: The Balance Theory of Wisdom in Educational Settings." p. 233.
[357] Ibid.
[358] David, and Foray. "Economic Fundamentals of the Knowledge Society."

tacit knowledge can be lost, for example, when knowledge held by older generations is not passed on to the younger generation.

Sternberg et al. summarize three characteristic features of tacit knowledge:

1. The structure is procedural, which means it is related to action and uses and takes the form of 'knowing how' rather than 'knowing that' (declarative knowledge).
2. The condition of its use is that it is practically useful and instrumental to the attainment of goals people value.
3. It is usually acquired without direct help from others (although others can guide one to acquire this knowledge).[359]

Sternberg describes research that shows reliable measures of tacit knowledge, which were developed for use with individuals in clinical settings in the psychology field.[360] After controlling for variables such as cognitive abilities and personality-scale measures, Sternberg finds that the tacit knowledge measures are the best predictors of actual performance in jobs and at school. In fact, he suggests, tacit knowledge predicts school performance as well as or better than do academic-ability indicators.[361] We look more specifically at tacit, informal, knowledge measures below.

Sternberg suggests that measures of wisdom need to focus on the process of thinking and that particularly important are measures of the extent that people take the common good into account in their decision-making, and the extent that they balance the long and short-term interests of self, others, and institutions.[362] He speculates that "perhaps the field of education has too long concentrated on things that are easy to measure, and needs also to concentrate on things that, however difficult they may be to measure, are especially important to measure."[363]

Criteria for wisdom such as the above would be good to measure if data were available. It should be possible to include questionnaire instruments using scenarios such as those used by Sternberg in survey approaches to measurement.

4.4.2 Explicit theories and measures of wisdom

Explicit wisdom, according to Sternberg, has been researched most extensively by Paul Baltes and his colleagues at the Max Planck Institute of Human Development in

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[359] Sternberg, Robert J., Robert K. Wagner, Wendy M. Williams, and Joseph A. Horvath. "Testing Common Sense," *American Psychologist*, vol. 50, no. 11, 1995: 912-927.
[360] Sternberg. "Why Schools Should Teach for Wisdom: The Balance Theory of Wisdom in Educational Settings."
[361] Ibid.
[362] Ibid.
[363] Ibid. p. 235.

Berlin.[364] Their work overlaps with that of Sternberg and the findings between the two groups are complementary. Baltes, et al. identified criteria for explicit wisdom both from their initial implicit research as well as through their reviews of philosophical and cultural-historical analyses, which Baltes contends are more comprehensive and organized than common sense views of wisdom.[365] Their "Berlin wisdom paradigm" defines wisdom as "an expert knowledge system concerning the fundamental pragmatics of life,"[366] and their measures of explicit wisdom focus mainly on wisdom-related performance in cognitive decision-making, as do those of Sternberg.

Pragmatics of life refers to questions about life planning, life management, and life review. The methodology used is qualitative and involves interviewing study participants about life-planning and morally challenging problems in their lives that, potentially, call for wise responses. These responses are then transcribed and rated based on five components, identified as necessary for wisdom-related performance. Baltes and Staudinger believe that the criteria chosen are "suited for application to a wide array of person-specific as well as social manifestations of wisdom."[367] The five criteria for the evaluation of wisdom used by Baltes and his colleagues are:

- Rich factual knowledge (general and specific knowledge about the conditions of life and its variations)
- Rich procedural knowledge (general and specific knowledge about strategies of judgment and advice concerning the meaning and conduct of life)
- Life-span contextualism (knowledge about the contexts of life, such as education, family, work, friends, leisure, the public good of society, etc., and their temporal [short- and long-term] relationships)
- Relativism (knowledge about differences in values, goals, and priorities held by individuals and society and explicit concern with the topics of virtue and the common good)
- Uncertainty (knowledge about the relative indeterminacy and unpredictability of life and ways to manage)[368]

According to Baltes and Staudinger, the first two criteria are necessary for wisdom but are characteristic of all types of expertise, and the last three criteria, labeled as meta-criteria, are specific to wisdom per se. This model provides both a basis for questions denoting real-life problems, which are given to respondents, and the criteria for rating responses. Answers are considered to be wise based on how many of the above components the answer reflects. Data collected by the Baltes team to date is supportive of this model and the assumption that "wisdom has a core and that wisdom-related

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[364] Ibid.
[365] Baltes. *Wisdom as Orchestration of Mind in Virtue*, accessed.
[366] Baltes, and Staudinger. "Wisdom: A Metaheuristic (Pragmatic) to Orchestrate Mind and Virtue toward Excellence."
[367] Ibid. p. 126.
[368] Ibid.

manifestations, if and when they occur, can be evaluated in terms of indicators of quality and quantity."[369]

The Baltes team has conducted approximately 12 qualitative wisdom studies and, unfortunately, has found that wise performance is rare, having been found in only 5% of those tested. In 1996, on any given criteria, where the highest wisdom score was seven, the median score among all groups tested was 3.04 with a standard deviation of 1.08—a low-average performance.[370] The Baltes team found no major age differences in wisdom during middle adulthood. However:

> [I]f one examines the relative proportion of people in the top 20% performance category by age across multiple studies, there is some evidence that if age and facilitative experiential contexts collaborate, more older than younger participants are in the top 20%.[371]

This finding suggests that life experience and lifelong learning is important in the manifestation of wisdom and that it takes time to achieve wisdom through a continuing process of "acquisition and transformation."[372] On the other hand, the Baltes team suggests that "having lived longer in itself is not sufficient for acquiring more knowledge and judgment capacity in the wisdom domain. Other factors need to enter into a coalition that, as an ensemble, is generative of wisdom."[373]

In order to discover the determinants of wisdom, the Baltes team tested 33 psychometric indictors that were based on 14 tests and found that ten of these indicators predicted 40% of the variance in wisdom-related performance and contributed to movement toward wisdom. However, when measures of these indicators were taken alone, none of them accounted for more than 18% of the variance in the ratings. These ten attributes that, together, predict wisdom-related performance were identified as: fluid intelligence (based on abstract reasoning independent of experience: natural ability), crystallized intelligence (based on learning, knowledge, and experience), creativity, cognitive style (including both intellect and affect), social intelligence (associated with goals that reflect the social good rather than only personal advancement), openness to experience, movement toward personal growth, psychological-mindedness (motivationally interested in wisdom), general life experience (both positive and negative), and specific professional experience. Among these ten attributes, they found openness to experience was the strongest personality predictor of high wisdom scores.

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[369] Ibid. p. 125.
[370] Staudinger, Ursula M., and Paul B. Baltes. "Interactive Minds: A Facilitative Setting for Wisdom-Related Performance?," *Journal of Personality and Social Psychology*, vol. 71, no. 4, 1996: 746-762. p. 748.
[371] Baltes, and Staudinger. "Wisdom: A Metaheuristic (Pragmatic) to Orchestrate Mind and Virtue toward Excellence." p. 128.
[372] Ibid.
[373] Ibid. p. 128.

In testing the difference between individual and collaborative results of wisdom, the researchers found that social collaboration facilitated wisdom-related performance if the participants took time and reflected on this discourse, but this was truer for older adults than for younger adults. Individuals who discussed the problems presented in the study with others, (including individuals who reflected on the problem through an internal dialogue with a wise imaginary other), had higher scores for wisdom-related performance than those who did not consult with others. These findings illustrate that wisdom involves multiple attributes and, according to Baltes and Staudinger, [t] he outcome is the orchestration of mind and virtue toward excellence […] and the common good."[374]

Kramer reports one Canadian study that used the criteria of the Baltes team to measure wisdom in a group of 78 people who had been nominated as wise by peers, 78 nominators, and 22 self-referred "wise" individuals for a 1996 Ph.D. dissertation from the University of Concordia in Montreal.[375] Kramer notes that this study by Tracy Lyster is one of the few large-scale studies of wisdom outside of the Max Planck Institute studies of the Baltes group. In addition to using the five criteria noted above, Lyster added two criteria to measure affect. All of the subjects were interviewed personally about their conception of wisdom and about personal problems in their own lives. The interviews were rated on the basis of the seven criteria. Lyster also tested the participants using cognitive and personality measures from a battery of psychological tests.

As did the Baltes team, Lyster found overall performance on the wisdom measure to be in the low / average range, with the wisdom nominees achieving the highest scores. However, the highest score on the wisdom measure was 32 out of 63 points, or 51% of the potential score. Those who had identified themselves as wise particularly scored in the low range. Kramer notes that Lyster also found openness to experience, as identified through the interviews, to be the highest predictor in producing wisdom-related, or holistic, thinking.

Neither the Baltes group nor Lyster found wisdom-related performance to be significantly related to the formal education level of the participants.[376] However, Baltes remarks:

> A certain level of general education seems to be a must for the emergence of wisdom, because without it, the collective goods of the past that are necessary for the insights of wisdom would not be accessible […]. But definitely, there is more than formal education *per se* needed to achieve wisdom[377]

Baltes also remarks that common sense views of wisdom are mainly based on experience rather than abstract, formal, knowledge:

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[374] Ibid. pp. 129, 132.
[375] Kramer. "Wisdom as a Classical Source of Human Strength: Conceptualization and Empirical Inquiry."
[376] Ibid.
[377] Baltes. *Wisdom as Orchestration of Mind in Virtue*, accessed. pp. 180–181.

> [W]hen people are asked for spontaneous descriptions of wisdom, their characterization is less that of an abstract conception of wisdom, as would be true for philosophers, than a characterization of exemplars of wise persons whom they know from their lives. This is an important insight. It is important because it makes clear that everyday beliefs do not consider the theoretical analysis of wisdom, for instance its foundation in the philosophical writings about wisdom or wisdom-related texts such as the bible or constitutions of state. Wisdom in everyday life is represented by knowledge of select people judged to be wise, much more so than by a conceptual analysis of wisdom, for instance, of how means and ends can be linked together to produce a good life.[378]

4.4.3 Latent factor analysis: indirect wisdom measures and sample wisdom scales employing questionnaires

Below are four examples of attempts to create scales to measure elements of wisdom on survey questionnaires. None of them have been used on large, public samples, and all of them are in various stages of development.

1. Three-dimensional Wisdom Scale (3D-WS)

Monika Ardelt, with a team of researchers from the University of Florida, has developed a three-dimensional wisdom scale for use in large, standardized surveys of older populations, which has tested positively for construct and convergent validity and reliability.[379] The researchers designed the scale to be administered as part of a standardized survey and are more interested in discovering qualities of "wise persons," rather than in studying expert knowledge as advanced cognitive functioning "in the pragmatics of life," as Baltes and the researchers at the Max Planck Institute define wisdom.[380] In other words, Ardelt is concerned with wisdom as a *process* or *state of being,* rather than as a "state of knowledge."[381] It includes "cognitive, reflective, and affective effect indicators" that indirectly measure elements of wisdom. Ardelt notes:

> Although it might be difficult or even impossible to measure wisdom *per se* through a standardized self-administered questionnaire, it is hypothesized that wisdom can be assessed indirectly through indicators that are essential elements of the latent variable wisdom […]. One major limitation with most empirical wisdom studies to date is that they are not well suited for large, representative

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[378] Ibid., accessed. p. 218.

[379] Ardelt, Monika. "Empirical Assessment of a Three-Dimensional Wisdom Scale," *Research on Aging*, vol. 25, no. 3, 2003: 275-324.

[380] Ardelt, Monika. "Wisdom as Expert Knowledge System: A Critical Review of a Contemporary Operationalization of an Ancient Concept," *Human Development*, vol. 47, no. 5, 2004: 257-285.

[381] Ibid.

samples because they require at least two trained coders who rate the transcribed interviews. To measure wisdom in large samples, it is therefore necessary to develop a standardized wisdom scale that can be administered as part of a standardized survey.[382]

In defining wisdom, Ardelt relies on the groundbreaking work of Clayton and Birren, who, in 1980, first explored the integration of cognitive, reflective, and affective dimensions in studying individual perceptions of wisdom.[383]

> Intellectual training or formal instructions are not enough for wisdom to emerge […]. Wisdom, however, needs to be realized through reflection on personal *experiences*, and no amount of easily available knowledge can be taught, for example at universities, or distributed through the media. Hence, wisdom should be immune to cohort effects that are based on the greater availability of intellectual knowledge alone.[384]

Ardelt notes that the definition of wisdom that includes cognitive, reflective, and affective elements "appears to be compatible with most modern as well as ancient descriptions of wisdom."[385] She makes a distinction between Eastern and Western views of wisdom, stating that while Western notions of wisdom often emphasize the explicit knowledge and analytical abilities of the cognitive and reflective dimensions, Eastern notions also integrate an implicit affective dimension, which is often neglected in Western definitions of wisdom:

> In the Eastern wisdom traditions, wisdom is characterized by flexibility, honesty, sensitivity, understanding, compassion, altruism, and a balanced state of mind that is able to perceive and accept the reality of the present moment. Wise persons look toward the past with gratitude, try to be of service in the present, and consider the future with responsibility.[386]

Ardelt describes the cognitive, reflective, and affective dimensions or elements of wisdom as follows:

> "The **cognitive** component is assessed by items that measure an understanding of life or the desire to know the truth, i.e., to comprehend the significance and deeper meaning of phenomena and events, particularly with regard to intrapersonal and

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[382] Ardelt. "Empirical Assessment of a Three-Dimensional Wisdom Scale." pp. 276, 285.

[383] Clayton, Vivian P., and James E. Birren. "The Development of Wisdom across the Life Span: A Reexamination of an Ancient Topic," in *Life-Span Development and Behavior*, ed. Baltes, P. B. and O. G. Brim Jr., Vol. 3, 103-135. New York: Academic Press, 1980. cited in Ardelt. "Empirical Assessment of a Three-Dimensional Wisdom Scale."

[384] Ardelt. "Wisdom as Expert Knowledge System: A Critical Review of a Contemporary Operationalization of an Ancient Concept." p. 271.

[385] Ardelt. "Empirical Assessment of a Three-Dimensional Wisdom Scale." p. 277.

[386] Ibid. p. 283.

interpersonal matters. [This] includes knowledge and acceptance of the positive and negative aspects of human nature, of the inherent limits of knowledge, and of life's unpredictability and uncertainties."

Operationalization:
"Items or ratings should access
- the ability and willingness to understand a situation or phenomenon thoroughly
- knowledge of the positive and negative aspects of human nature
- acknowledgement of ambiguity and uncertainty in life
- the ability to make important decisions despite life's unpredictability and uncertainties."

The **reflective** component measures the ability to look at "phenomena and events from multiple perspectives. [It] requires self-examination, self-awareness and self-insight."

Operationalization:
"Items or ratings should assess
- the ability and willingness to look at phenomena and events from different perspectives
- the absence or subjectivity of projections (i.e., the tendency to blame other people or circumstances for one's own situation or feelings."

The **affective** element captures the presence of "sympathetic and compassionate love for others."

Operationalization:
"Items or ratings should assess
- the presence of positive emotions and behavior toward others
- the absence of indifferent or negative emotions and behavior toward others"[387]

Thirty-nine items for the 3D-WS were chosen from an initial item pool of 158 items selected from three psychology manuals: *Directory of Unpublished Experimental Mental Measures*, Volumes 1–6,[388] *Measures of Social Psychological Attitudes,*[389] and *Scales for*

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[387] Ardelt. "Wisdom as Expert Knowledge System: A Critical Review of a Contemporary Operationalization of an Ancient Concept." p. 275.

[388] Goldman, Bert A., and John L.Saunders, eds. *Directory of Unpublished Experimental Mental Measures, Vol. 1*. New York, Behavioral Publications, 1974.

, Goldman, Bert A., and David F. Mitchell, eds. *Directory of Unpublished Experimental Mental Measures, Vol. 6*. Washington, D.C., American Psychological Association, 1995.

[389] Robinson, John P., and Phillip R. Shaver, eds. *Measures of Social Psychological Attitudes, Revised*. Ann Arbor, Michigan, Institute for Social Research, 1973.

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the Measurement of Attitudes.[390] After extensive rating and testing procedures, 14 items were chosen for the cognitive dimension, 12 items for the reflective dimension, and 13 items for the affective dimension of the 3D-WS. Participants being surveyed are instructed to rate the items on one of two five-point scales ranging from 1 (strongly agree or definitely true of myself) to 5 (strongly disagree or not true of myself), depending on how the statement is worded.

The entire 39-item 3D-WS is reproduced in Appendix 1. Examples of the statements include:

Cognitive dimension:
- "Ignorance is bliss
- It is better not to know too much about things that cannot be changed
- In this complicated world of ours, the only way we can know what's going on is to rely on leaders or experts who can be trusted
- Simply knowing the answer rather than understanding the reasons for the answer to a problem is fine with me
- I often do not understand people's behavior"

Reflective dimension:
- "Things often go wrong for me by no fault of my own
- I try to look at everybody's side of a disagreement before I make a decision
- When I am confused by a problem, one of the first things I do is survey the situation and consider all the relevant pieces of information
- Sometimes I get so charged up emotionally that I am unable to consider many ways of dealing with my problems"

Affective dimension
- "People make too much of the feelings and sensitivity of animals
- It's not really my problem if others are in trouble and need help
- Sometimes I feel a real compassion for everyone
- I'm easily irritated by people who argue with me
- If I see people in need, I try to help them one way or another" [391]

The first wave of data collection took place between December 1997 and June 1998. Since Ardelt is interested in aging and wisdom effects in aging, participants included 180 older adults, with ages ranging from 52 to 87 years with a median age of 72. Of the total respondents, 73% were women, 29% had completed high school (as highest educational level), 17% had completed some university, 13% had completed a bachelor's degree, and 31% had completed a graduate degree. Results showed that five participants scored below the 25% quartile on each of the three dimensions of wisdom, 28 participants scored above

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[390] Shaw, Marvin E., and Jack M.Wright, eds. *Scales for the Measurement of Attitudes*. NewYork, McGraw-Hill, 1967.
[391] Ardelt. "Empirical Assessment of a Three-Dimensional Wisdom Scale."

the 25% quartile but below the 75% quartile on each of the three dimensions; and 12 participants scored above 75% on each of the three dimensions. The scores of the other participants, who did not have consistent scores on each of the dimensions (e.g., high for affect but low for reflective), were combined together and averaged. However, these scores were not reported.

After completing the questionnaire, 40 of the participants (12 with high scores, 10 with low scores, and 18 with median scores) were interviewed, and 10 months after the first questionnaire, 123 participants completed the 3D-WS for the second time in order for the researchers to assess the scale. As expected, the 3D-WS was not related to the participants' marital and retirement status, gender, race, per capita income, or social desirability index, although cognitive dimensions correlated more strongly with these than did the reflective and affective dimensions. However, the 3D-WS was

> … significantly and positively correlated with education (.21) and the status of the longest-held occupation (.19), although the correlations are much weaker than the correlations of the 3D-WS with mastery (.63), general well-being (.45), purpose in life (.61), [or] subjective health (.30).[392]

The 3D-WS was negatively related to depression (-.59), death avoidance (-.33), and fear of death (-.56).[393] In conclusion, Ardelt stresses that:

> The present study is just the first step in the construction of a valid and reliable standardized self-administered wisdom scale. Further empirical research is needed to replicate the findings with a larger and more representative data set […]. Although it is likely that wise people possess other positive qualities that are not directly captured by the cognitive, reflective, and affective personality characteristics of the 3D-WS, it is hypothesized that the acquisition of those three personality qualities is necessary but also sufficient for a person to be called wise […]. Finally, longitudinal studies are required to examine the predictors and the development of wisdom across the life course and to investigate the relationship between wisdom and age.[394]

Ardelt also suggests that future wisdom studies broaden their focus by including more perspectives from religious, philosophical, and anthropological perspectives.[395]

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[392] Ibid. p. 305.
[393] Ibid. p. 305.
[394] Ibid. pp. 314, 315.
[395] Ardelt. "Wisdom as Expert Knowledge System: A Critical Review of a Contemporary Operationalization of an Ancient Concept."

2. Self-Assessed Wisdom Scale (SAWS)

Jeffery Dean Webster of Langara College in Vancouver, reacting to the question, "Is it a fool's errand to try to capture wisdom within the parameters of a paper-and-pencil questionnaire?", has developed a multidimensional scale, the Self-Assessed Wisdom Scale (SAWS), which he reports is highly reliable, in order to test the wisdom of individuals.[396] The SAWS is based on five interdependent factors: experience, emotional regulation, reminiscence and reflectiveness or awareness, openness, and humour, which are "hypothesized to be relatively characteristic of a prototypically wise individual." Webster emphasizes that these components operate in a holistic manner:

> Each part is a necessary, but not sufficient, element in wisdom's realization. Possessing intellect but lacking prosocial values, for example, can only make one smart, but not wise; conversely, manifesting altruistic impulses but without the supporting intellectual properties may produce a well-intentioned, yet ineffectual intervener. A synthesis of at least these two skill sets would be required for wisdom to emerge.[397]

The instrument gives six statements for each factor, for a total of 30 statements, and asks the respondents to indicate their level of agreement / disagreement on a 6-point Likert-type scale (from 1 = strongly disagree to 6 = strongly agree.) The total SAWS score is considered to be an "index of wisdom strength," and a person is considered wise if the dimensions are "holistically combined to a high degree in an individual." Table 4 below provides descriptions of the characteristics for each dimension and sample questions (in italics) from the SAWS questionnaire. (Six out of the 30 questions were "negatively worded and reverse-scored to reduce response set.")

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[396] Webster. "An Exploratory Analysis of a Self-Assessed Wisdom Scale."
[397] Ibid. p. 14.

Table 4. Prototypical characteristics and sample items for all five self-assessed wisdom scale dimensions

Dimension	Prototypical characteristics of high scorers
Experience	Rich and varied experiences in interpersonal contexts, particularly those requiring resolution of difficult life choices; experience coping with important life transitions; exposure to life's "darker side" (e.g., dishonesty, hypocrisy). *Q1: I have experienced many painful events in my life.* *Q16: I have experienced many moral dilemmas.*
Emotions	Exposure to, and appropriate regulation of, the full spectrum of human emotions; an ability to distinguish among subtle, mixed emotions; an acceptance of, and openness to, both positive and negative affective states. *Q17: I am very good at reading my emotional states.* *Q27: I am good at identifying subtle emotions within myself.*
Reminiscence	Reflectiveness, particularly as it pertains to one's personal past; using memories to "know oneself," connect the past with the present, and gain perspective. *Q18: Reviewing my past helps gain perspective on current concerns.* *Q28: Remembering my earlier days helps me gain insight into important life matters.*
Openness	Openness to ideas, values, and experiences, particularly those which may be different from one's own; willingness to sample novelty; appreciation of multiple perspectives which may be controversial; tolerance of others. *Q5: I like to read books which challenge me to think differently about issues.* *Q30: I do not like being around other persons whose views are strongly different from mine.*
Humor	Recognition of life's ironies and a well-developed sense of humor, especially of a self-effacing kind; ability and willingness to make others feel comfortable; use of humor as a mature coping strategy. *Q9: There is nothing amusing about difficult situations.* *Q24: At this point in my life, I find it hard to laugh at my mistakes.*

Source: Adapted from Webster, Jeffrey Dean. "An Exploratory Analysis of a Self-Assessed Wisdom Scale." *Journal of Adult Development*, 10, no. 1 (2003): 13–22, p. 16.

Webster conducted three studies to test the reliability of the scale, differences in people's implicit theories of wisdom, and the scale construct validity, respectively. In the first

study, the SAWS was given to 87 men and 179 women, ages 18 to 74, having a mean education level of 14.36 years. The main analysis was focused on the reliability of the total score, and found: "For the entire scale a reliability coefficient of .78 was obtained, indicating that the SAWS is a reliable instrument."[398]

The second study was designed to "demonstrate divergent validity." Participants included 45 men and 44 women, ranging in age from 18 to 88, and having a mean education level of 14.73 years. Half of the participants were instructed to complete the questionnaire as they thought a wise person would and the other half of the participants were instructed to complete it as they thought a foolish person would. In this study, the mean SAWS score for those participants who were requested to answer as they thought a foolish person would was 96.59; and the mean score for those requested to answer as they thought a wise person would was 137.24. According to Webster, the difference in the scores is highly significant and demonstrates that the participants had a strong sense of both terms and that the SAWS showed "excellent discriminate validity insofar as people's implicit theories of wisdom are concerned."[399] Scores on the SAWS of 152 or higher are classified as wise and scores below 152 are classified as non-wise. Webster notes that the cutoff score for a "wise" designation was set relatively high since wisdom is conceptualized as a rare phenomenon.

In the third study 39 men and 46 women, ranging in age from 22 to 78 years and having a mean education level of 14.32 years, completed two additional scales to test generativity and ego integrity, in addition to the SAWS. The 20- item Loyola Generativity Scale uses statements such as "I try to pass along the knowledge I have gained through my experiences," and "[o]thers would say that I have made unique contributions to society." Sample items from the 10-item ego integrity scale reported by Taft and Nehrke include "I am willing to take responsibility for my decisions," "I would not change my life if I lived it over," and "I am discontented with my life." Results showed that "the SAWS was significantly correlated with both generativity and ego integrity, indicating that higher scores on the SAWS are predictive of higher scores on both theoretically relevant variables."[400]

The total SAWS score found in the third study resulted in 63 (74.1%) participants designated as non-wise and 22 (25.9%) participates designated as wise. These total SAWS scores were correlated with demographic variables. The study found non-significant correlations between the total SAWS scores and the educational levels of the participants. This lead Webster to surmise:

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[398] Jason, Leonard A., Arne Reichler, Caroline King, Derryk Madsen, Jennifer Camacho, and Wendy Marchese. "The Measurement of Wisdom: A Preliminary Effort," *Journal of Community Psychology*, vol. 29, no. 5, 2001: 585-598. p. 17.

[399] Ibid. p. 18.

[400] Webster. "An Exploratory Analysis of a Self-Assessed Wisdom Scale." p. 20.

If we can view educational attainment as a crude proxy for intelligence, then this suggests that the SAWS truly measures wisdom uncontaminated by intelligence. This needs to be tested directly, however, with appropriate measures from standardized intelligence tests.[401]

The SAWS also found no association between wisdom and age, which as Webster notes, indirectly reinforces "the earlier contention that it is not chronological age per se which is important, but the specific types of experiences one encounters over the life course."[402] Women scored higher than men on the SAWS, which, Webster suggests, might be explained by the noncognitive emphasis of the SAWS and the fact that women often score higher on scales that have an affect dimension than do men.

In conclusion, Webster contends that the SAWS appears to be a good start toward developing a questionnaire instrument that can capture important dimensions of wisdom. He recommends that other candidates for inclusion, such as social intelligence and spiritual connectedness, should be explored, and notes that improvements to the SAWS are underway.

3. Foundational Value Scale

Leonard Jason, et al. of DePaul and Roosevelt Universities in Chicago, developed the Foundational Value Scale (FVS), reproduced below, as an assessment tool to measure the construct of wisdom.[403] The FVS was specifically designed to test people's intrinsic perceptions of wisdom. The authors decided to use this indirect approach to measuring wisdom because they thought it "might be a less biased approach for assessing what people consider to be wisdom than to ask participants to directly rate characteristics of their own wisdom."[404]

The scale is based on a factor analysis of a qualitative pilot study that asked 43 individuals to name the wisest living person they knew, whether they had met that person or not, and then to discuss qualities of this person and give examples of the manifestation of their wisdom. Participants in the study were, for the most part, highly educated: 2% had a high school degree, 28% had at least one year of university, 21% had a university degree, and 49% had a graduate professional degree. The categories mentioned most were "drive / tenacity / leadership" and "insight / spirituality." The second highest response was "being smart" and "being loving." Reliable / practical, creative / curious,

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[401] Jason, Reichler, King, Madsen, Camacho, and Marchese. "The Measurement of Wisdom: A Preliminary Effort." p. 19.
[402] Ibid. p. 20.
[403] Ibid.
[404] Ibid. p. 591.

being open, light-hearted, and "a variety of other interpersonal skills" were also mentioned.[405]

The authors used these results as well as work by three authors, Thomas Berry,[406] Karen Wegela,[407] and Margaret Burkhardt,[408] to develop the Foundational Value Scale. According to Jason, et al., Berry identified three basic processes or patterns of the universe, namely differentiation, subjectivity, and communion, as well as activities or actions that are in harmony with these processes and are considered ethical and wholesome. Differentiation involves reverence for nature and seeing and "attending to" all the creativity and varied expressions of life in the world; subjectivity refers to individual inner depth, uninhibited imagination, creativity, and spontaneity; and communion involves compassion and warmth for others, relationship, interrelatedness, and the development of community.

According to Jason et al., Wegela identified spaciousness, clarity, and warmth as three aspects of wisdom from a Buddhist point of view.

> Spaciousness involves accommodating whatever experiences arise within a person. Clarity involves fully apprehending the textures, temperatures, and colors of our experiences, without embellishment. And finally, warmth involves compassion for ourselves and others.[409]

These qualities can be brought to any experience and when they are present they indicate intrinsic health. The authors note: "Regardless of one's external condition or physical difficulties, health is always within us if we are open to these experiences; the purpose of the healer is to uncover what already exists."[410]

Jason, et al. note that Burkhardt identified inner strength, meaning in life, and harmonious interconnectedness as three characteristics of spirituality, which are connected with wisdom. "Inner strength involves finding an animated sense of joy and peace within one's inner wellspring of awareness. Finding a meaning or a purpose in life points to a sense of hope in the unfolding mystery, uncertainty, and ambiguity of life, and an ability to see beyond present realities. The last characteristic, interconnectedness, involves finding harmony with the self, others, and the universe."[411]

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[405] Ibid.

[406] Berry, Thomas. *The Dream of the Earth*, San Francisco: Sierra Club Books, 1988.

[407] Wegela, Karen K. "'Touch and Go' in Clinical Practice. Some Implications of the View of Intrinsic Health for Psychotherapy," *Journal of Contemplative Psychotherapy*, vol. 5, 1988: 3-23.

[408] Burkhardt, Margaret A. "Spirituality: An Analysis of the Concept," *Holistic Nursing Practice*, vol. 3, no. 3, 1989: 69-77.

[409] Jason, Reichler, King, Madsen, Camacho, and Marchese. "The Measurement of Wisdom: A Preliminary Effort." p. 588.

[410] Ibid. p. 588.

[411] Ibid. p. 588.

Combining the ideas of these three authors with results of the pilot study, Webster produced the Foundation Value Scale reproduced in Table 5.

Table 5. The Foundational Value Scale (FVS)

	Definitely		Maybe		Not at all
1.Animation (rapture, joy, hope, and happiness)	5	4	3	2	1
2. Harmony (balanced and centered within)	5	4	3	2	1
3. Flow (so involved in an activity that nothing else seems to matter)	5	4	3	2	1
4. Openness (can accommodate whatever experiences that arise)	5	4	3	2	1
5. Positive self-esteem and self-love	5	4	3	2	1
6. Gratitude and appreciation	5	4	3	2	1
7. Appreciation of things as they are without embellishment	5	4	3	2	1
8. Compassion and warmth for others	5	4	3	2	1
9. Demonstrates a concern for the health of the environment	5	4	3	2	1
10. Feels love, fellowship, or union with god [however one defines this]	5	4	3	2	1
11. Sees meaning and purpose in life	5	4	3	2	1
12. Experiences an underlying unity in life	5	4	3	2	1
13. Capacity to cope with uncertainty	5	4	3	2	1
14. Intelligence	5	4	3	2	1
15. Good judgment	5	4	3	2	1
16. Humor	5	4	3	2	1
17. Childlike wonder and awe	5	4	3	2	1
18. Being in the present	5	4	3	2	1
19. Kindness	5	4	3	2	1
20. Problem-solving ability	5	4	3	2	1
21. Reverence for nature	5	4	3	2	1
22. Living a spiritual life	5	4	3	2	1
23. Genius	5	4	3	2	1

Question: For each item, circle the number, using the 5-point scale below, that best describes a person who has wisdom.

Source: Adapted from Jason, Leonard A., Arne Reichler, Caroline King, Derryk Madsen, Jennifer Camacho, and Wendy Marchese. "The Measurement of Wisdom: A Preliminary Effort." *Journal of Community Psychology*, 29, no. 5 (2001): 585–98, pp. 596–597.

The second study conducted by Jason et al. was designed to test the validy of the Foundational Value Scale (FVS). The participants were 242 students in four university introductory psychology classes, whose average age was 19 years. The scale, reproduced in Table 5, originally contained 38 items, although it has since been reduced to 23 items, each with a 5-point scale to indicate whether the concept best describes a person who has wisdom. The students were also given four additional psychological tests that measure levels of depression, stress, optimism, and social support: the Center for Epidemiology Studies Depression (CES-D), a 20-item self-reported inventory of depression; Perceived Stress Scale (PSS), a 4-item revised version of a previously 14-item measure of global

perceived stress; the revised Life Orientation Test (LOT), a measure of positive expectancies; and a shortened version of the Interpersonal Support Evaluation List (ISEL), a 16-item scale. The students completed all five scales (including the FVS) in 15-minutes.

The FVS data were analyzed using SPSS computer programs analyzing data internal consistency and factor patterns. The results produced five components of wisdom, which together explained 48% of the total variance. These components were:

- Harmony—balance, self-love, good judgment, appreciation, and purpose in life
- Warmth—kindness, compassion, animation, being in the present, and sense of humour
- Intelligence—use of one's intelligence to solve problems and help others
- Nature—connection to Nature, a concern and reverence for the environment, the experience of flow, a sense that all life is interconnected
- Spiritual—living a spiritual life, experience of union and wholeness[412]

This is one of the few studies to identify a spiritual element in wisdom. Higher age was associated with higher scores on the Nature component than younger participants, although the age range was only 17 to 27). According to Jason, et al., the scales measuring support, depression, and stress were minimally correlated with the FVS scores. Higher scores on the depression scale, however, were significantly related to the spirituality component of the FVS and stress scores were negatively related the harmony component of the FVS. Results found that the FVS has "adequate internal and test-retest reliability."[413] The authors suggest that use of the FVS as "a self-evaluat[ed] evaluation of one's own sense of wisdom rather than someone else's […] might be the most common future use of such an instrument."[414]

4. The Wisdom Development Scale (WDS)

Through qualitative methods such as semi-structured interviews and focus groups as well as through explicit, expert reviews, Scott C. Brown of Mount Holyoke College in Massachusetts developed a model of wisdom, which he used to develop a Wisdom Development Scale (WDS). Brown created the WDS specifically to measure wisdom in a collegiate environment.[415] In testing the model, Brown was joined by his student, Jeffrey A. Greene. Stating that wisdom "encompasses many outcomes normally associated with higher education,"[416] the authors are particularly concerned with student learning

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[412] Ibid. p. 595.
[413] Ibid.
[414] Ibid.
[415] Brown, S. C. "Learning across Campus: How College Facilitates the Development of Wisdom," *Journal of College Student Development*, vol. 45, no. 2, 2004: 134-148.
[416] Brown, and Greene. "The Wisdom Development Scale: Translating the Conceptual to the Concrete." p. 1.

outcomes and wisdom as it develops along the continuum of life in college (university) students. According to Brown and Greene: "Wisdom develops when students go through the core 'learning-from life' process, comprised of reflection, integration, and application."[417] They elaborate:

> [W]hile a college education is more accurately conceptualized as a sum that is greater than its individual parts, many studies related to learning outcomes isolate discrete aspects of the college experience. Since discrete measures provide easily understood measures of accountability, they miss more complex and meaningful college-related student growth. Increasingly there is a greater interest in understanding the more ineffable outcomes of students' aggregate college experiences that account for what they reflect, integrate, and apply what they learn in and out of class, on and off campus.[418]

The final WDS is based on a multidimensional construct of wisdom containing seven elements: self-knowledge, emotional management, altruism, inspirational engagement, judgement, life knowledge, and life skills. Brown and Greene administered the 141-item, seven-point Likert-type Wisdom Development Scale (WDS) to 1,188 undergraduate students using a web-based questionnaire. Since their report is concerned with validating the WDS, they did not report either the survey participant scores or the specific items included in the scale. The authors conclude:

> This study has established a preliminary scale to measure this wisdom construct, and scores were found to be reliable and valid through both exploratory and confirmatory factor analyses with this sample. This study is of particular interest to constituencies who have a vested interest in undergraduate education, and with further work, the scale can inform educational leaders' efforts to increase the holistic, integrative learning experience for their students.[419]

Work on the WDS is ongoing and the authors have plans for multiple samples, using participants with diverse ages and life experiences, in order to further demonstrate the reliability and validity of the scale, especially in its use "to examine the impact of the aggregate college experience."[420] The predictive, convergent, and divergent validity of the scale have not been tested as of January 2006.

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[417] Ibid. p. 6.
[418] Ibid. p. 1.
[419] Ibid. p. 17.
[420] Ibid. p. 17.

5. Learning Values

The evidence strongly suggests that, robbed of a broader meaning to our lives, we have entered an era of often pathological self-preoccupation: with our looks, careers, sex lives, personal development, health and fitness, our children, and so on [...]. The harm that modern Western culture is doing to our psychic well-being provides reason enough to forge a new system of values and beliefs. However, the need is made even more critical by the relationship between modern Western culture and the many other serious problems that Western societies face: the seemingly intractable economic difficulties, the widening social gulf, the worsening environmental degradation. Fundamentally, these are problems of culture, of beliefs, and of moral priorities, not of economics.[421]

Richard Eckersley

Values are generally considered to be moral or ethical convictions or attitudes on which a population bases its sense of purpose, goals, or directions to guide its actions.[422] . It is understood that broad and universal values such as equity, compassion, and a concern for the common good among others, are more likely to lead to socially valuable outcomes such as a healthy and well-educated population, environmental quality, security, and social inclusion than values based more strongly on individualism and self-interest. As noted above, this section is based on Western sources and the views of specific authors on values, which are not compared with GNH values, *per se*. However, it is hoped that the discussion of values in this section also reflects basic GNH values.

As previously noted, any measure of genuine progress is based on the implicit question—"progress towards what?"—and is therefore normative by its very nature. A measure of genuine progress assesses progress towards defined outcomes, and therefore inherently embodies a vision or ideal towards which society aspires. In other words, it is literally not possible to measure progress without a clearly defined sense of what it is that society wants to achieve, which in turn is based on basic values.

Michael Hechter, writing for the *Annual Review of Sociology,* argues:

> In part, social outcomes depend on the values, or motives, that lurk behind our actions (they also depend on other subjective elements, such as beliefs and attitudes toward risk). Among other things, the efficacy of the incentives that are used to channel our behavior—by lovers, friends, advertisers, social movements,

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[421] Eckersley, Richard. "The West's Deepening Cultural Crisis," *The Futurist*, vol. 27, no. 6, 1993: 8-14. p. 3.
[422] Heylighen. "What Is a World View?"

employers, and states—depends wholly on people's values. These values vary widely—both within the same society (some people seem more interested in attaining wealth, while others just as doggedly pursue status) and cross-culturally […]. It stands to reason that the institutions and organizations that are devised by altruists will differ from those that are created by egoists.[423]

Education has been concerned with teaching and developing values and improving the quality of life in both Western and oriental traditions since antiquity. According to Lourdes Quisumbing, the President of the United Nations Educational, Scientific and Cultural Organization/ Asia-Pacific Network for International Education and Values Education (UNESCO-APNIEVE), values are an integral component of basic education and are needed for an individual "to survive, to live and work in dignity, and to continue learning."[424] She lists the values needed for personal and social transformation as peace, human rights, dignity, democracy, tolerance, justice, co-operation, and sustainable development. Quisumbing notes:

> Even if not explicitly stated, or perhaps not even consciously intended, values and attitudes underlie the criteria and indicators in assessing all the areas of educational goals and objectives […]. It is only when we have the power to value that we will be able to distinguish the essential from the nonessential, and to realize that the dignity of the human person and the excellence of the human spirit are the ultimate criteria of quality.[425]

Quisumbing also notes that the goals of the UNESCO approach to quality education emphasize learning the values and attitudes needed for peace, diversity, human rights, and a sustainable future.[426]

Michael Adams, in his recent book, *Fire and Ice: The United States, Canada and the Myth of Converging Values*, which represents a decade of polls by Environics Research Group on social values, suggests that values are "the basic *learned* motivators of human behaviour," [emphasis added]. [427] while Environics CEO, Barry Watson, argues that values are formed largely in adolescence and early adulthood experience:

> Social values are informed by a person's prevalent perceptions and learnings provided both in the family and in his/ her close kinship group, and by exposure to the predominant sociohistorical environment and influences of the times into

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[423] Hechter, Michael. "Agenda for Sociology at the Start of the Twenty-First Century," *Annual Review of Sociology*, vol. 26, 2000: 697-698. p. 697.

[424] Quisumbing. *The Values /Attitudinal Dimension in Quality Education*, accessed. p. 2.

[425] Ibid., accessed. p. 4.

[426] United Nations Educational Scientific and Cultural Organization (UNESCO). *Major Programme I-- Education (Draft 31 C/5) Programme: Building Knowledge Systems through Quality Education and a Renewal of Education Systems, Section 1.2.1 Towards a New Approach to Quality Education*, Paris: UNESCO, 2000.

[427] Adams. *Fire and Ice: The United States, Canada and the Myth of Converging Values*.

which he or she is born, is being raised, and comes of age (by which we mean 'reaches sentient awareness of the world') […]. Values […] can also serve, as a person's or society's adaptation to, and justification of, current personal or cultural practices.[428]

Watson continues, that although values may change slowly they do evolve throughout one's lifetime, and may change more quickly in response to major socio-historical events such as the spread of new technology and diseases such as AIDS, or acts of terror and war.

Basically, values can help discriminate between what is beneficial to the wellbeing and sustainability of society, and what is detrimental. Issues of concern, or issues that are valued, are often used as proxies for values. Values are also referred to in the literature as attitudes, beliefs, convictions, principles, or virtues. Watson notes:

> [A] host of different aspects of people's world views are well captured by an assessment of their 'values'. These aspects include: expectancies, perceptions, and habits of thought; attitudes, judgments, and opinions; and intentions, tendencies and actions. Values are a good description for a whole host of mental, emotional, and motivational postures and preparednesses (or 'sets') with which we conduct our transactions with others and ourselves.[429]

According to Hitlin and Piliavin, values focus mainly on ideals, though these may be pragmatic, whereas attitudes are generally more concerned with concrete social objectives.[430] Although attitudes are relative, especially in a multicultural society such as Canada, researchers can identify basic core value patterns within societies.[431]

Values need to be sustained by the awareness of the population, the policy choices of governments, and the actions of both. Anthony Judge, in *The Encyclopedia of World Problems and Human Potential,* notices disconnects between values and actions, as, for example, when millions of dollars are spent to maintain a comatose, brain-damaged patient on life-support for many years or to maintain youthfulness with cosmetic surgery and cosmetics, while millions of people in the world are dying of HIV/ AIDS, war, genocide, and famine.[432] Governments also frequently allow the degradation of the

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[428] Watson, Barry. *What Are Social Values?*, Breakthrough Institute, 2006; accessed June 2006; available from http://www.thebreakthrough.org/future.php. p. 5.

[429] Ibid., accessed. p. 5.

[430] Hitlin, Steven, and Jane Allyn Piliavin. "Values: Reviving a Dormant Concept," *Annual Review of Sociology*, vol. 30, 2004: 359-393.

[431] Ibid.

[432] Judge, Anthony. *Encyclopedia of World Problems and Human Potential: Introductory Comments on Programme on Human Values and Wisdom*, Anthony Judge Website, 1993; accessed April 2005; available from http://www.laetusinpraesens.org/docs/valsum.php.

environment in exchange for short-term economic gains, which indicates that short-term economic gains may be more highly "valued" than the environment.[433]

John Peet argues that sustainability is not just a matter of science and economics, but is a basic moral principle. He quotes Brown, et al. of the Worldwatch Institute:

> We need a new moral compass to guide us into the twenty-first century—a compass grounded in the principles of meeting human needs sustainably. Such an ethic of sustainability would be based on a concept of respect for future generations.[434]

In this review, we are especially concerned with universal values that reflect both GNH values and the best of Western values, such as peace, compassion, and others that affect human and ecosystem wellbeing and sustainability. However, we also review examples of Western models based on values that do not produce healthy social outcomes. The intention of the Bhutanese to bring GNH values and princples into every level of their education system is exemplary, and can provide a powerful model for the rest of the world. Educational curricula chosen, at least in part, by the degree to which they support, nurture, and promote GNH values promise to ensure that GNH becomes embedded, not only in the consciousness of the Bhutanese people, but also into the structure of Bhutanese educational and other institutions.

5.1 Values and government policy models

Various governmental models, which are based on values, have developed in Canada, and they each involve a different set of trade-offs between values and policy. Laycock and Clarke provide a background report for the Canadian Policy Research Networks (CPRN) citizen's dialogue project, for which they reviewed federal and provincial Throne Speeches, party election platforms, and Royal Commission reports from 1940 through 2002.[435] They found three distinct socio-economic policy packages, which they define as the market citizenship model, the brokerage citizenship model, and the social democratic citizenship model. These models do not directly mirror the three main political parties,

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[433] Laycock, David, and Greg Clarke. *Framing the Canadian Social Contract: Integrating Social, Economic and Political Values since 1940*, Canadian Policy Research Networks, Discussion Paper No. P|02 Public Involvement Network, 2002; accessed May 2006; available from http://www.cprn.com/en/doc.cfm?doc=39.

[434] Brown, Lester R., Christopher Flavin, Hilary French, and Linda Starke. *State of the World, 1999*, New York and London: Worldwatch Institute and W.W. Norton & Company, 1999. p. 21, cited in Peet, John "A Guiding Ethic for the Socio-Economic System." Paper presented at the Sea of Faith Conference, New Zealand, November 27, 1999, University of Canterbury; accessed March 2006; available from http://sof.wellington.net.nz/peet1999.htm.

[435] Laycock, and Clarke. *Framing the Canadian Social Contract: Integrating Social, Economic and Political Values since 1940*, accessed.

as they have developed both within and across the boundaries of the three parties. Laycock and Clarke discuss each of these models in some detail and suggest that having "clarity and transparency concerning these values is essential to the health of our democracy."[436]

Basically, the market citizenship model, which emerged in the 1980s, promotes individualistic freedom and responsibility, "consumer sovereignty" and the free market, and opposes government intervention and "'special rights' or other support for various organized interests and institutions."[437] Here, "the values and practices of private market relations constrain and largely define social and political values."[438]

The brokerage citizenship model justifies, through political and social values, moderate regulation of the market and a modest welfare state. However, Laycock and Clarke ague, "'too much' emphasis on enhancing access and rights for all groups is rejected because too much state presence in the economy is seen to undermine business confidence and economic performance."[439]

The social democratic citizenship model supports a high degree of government involvement in the economy and an extensive welfare state. According to Laycock and Clarke: "In this model, political and social values play a large role in constraining the operation and social impacts of the private economic market and its values […]. In this model, we also see assertions that the social co-operation required for overall social welfare is undermined by the activities and institutions of the market economy."[440] Laycock and Clarke state that this view is rare in the previous two models. However, modern versions of the social democratic citizenship model also emphasize equality of opportunity within the market economy.

Laycock and Clarke argue that since the mid-1980s, all of these models have focused more on economic growth, deficit reduction, and boosting business confidence than on previous "redistributive commitments and initiatives than they had in the previous two decades."[441] The authors have found significant gaps between "value commitments" and "obligations to future generations," and, in particular, towards "policies on the environment we are leaving succeeding generations," which, they argue "will turn out to be one of the biggest social justice and collective social obligation questions of the twenty-first century."[442]

> [F]ederal legislation over the past decade has addressed water quality, air pollution, endangered species, fish-stock depletion, agricultural land degradation,

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[436] Ibid., accessed. p. v.
[437] Ibid., accessed. p. 22.
[438] Ibid., accessed. p. 33.
[439] Ibid., accessed. p. 35.
[440] Ibid., accessed. p. 36.
[441] Ibid., accessed. p. 14.
[442] Ibid., accessed. p. 27.

and other environmental questions. But this legislation and its official government promotion is typically placed in the context of improving or at least not compromising medium to long-term economic growth. It is seldom framed in relation to questions of long-term distributive justice. Put simply, Canadians are not encouraged to think of trade-offs between short-term economic gain and long-term social obligations and justice between generations. […] For these issues, trade-offs between social, economic and political values are bound soon to become undeniably substantial and very difficult. It is easy to imagine circumstances in which our individual freedoms and rights would have to be radically curtailed following environmental disasters and related vital resource shortages (of drinking water, fresh air, fuels, various foodstuffs, or even accessible wilderness).[443]

Because of the eological crisis, Laycock and Clarke argue that, in the near future, we will need to ask: "What role could or should the state play in enforcing which balance between co-operative and competitive behaviours and mechanisms in economic relationships?"[444] In conclusion, they suggest:

In short, despite our political leaders' past inattention to the connections between questions of distributive justice and environmental stewardship, there are good reasons to believe that they will be under increasing pressure to include future generations in our public considerations of what justice requires.[445]

5.2 Values and sustainable behaviour

Canadians, as Rosell and Furth note, show pro-environment values on polls, yet they often act in ways that threaten sustainability:[446]

Polls indicate that Canadians are among the most staunchly pro-environment citizens on the planet. Nine out of ten Canadians rate the environment as one of their top concerns; and three out of four say that sustainable development should be a major priority for Canada. Yet despite these strongly held views and values, Canada is among the world's most wasteful nations in terms of energy consumption, water use, and greenhouse gas emissions. And even though strong majorities of Canadians say that automobiles and fossil fuels pose a 'major' threat

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[443] Ibid., accessed. p. 27.
[444] Ibid., accessed. p. 27–28.
[445] Ibid., accessed. p. 28.
[446] Rosell, Steven A., and Isabella Furth. *Listening to the Public: Understanding and Overcoming Barriers to Sustainability*, Sustainability Research Initiative, Viewpoint Learning, Inc., 2006; accessed June 2006; available from http://www.viewpointlearning.com/publications/reports/BC_sustainability_0306.pdf.

to nature and that they are 'very concerned' about air quality, SUV sales have increased at double-digit rates over the last several years.[447]

If Canada is to move toward sustainability, Rosell and Furth suggest that "[e]xplaining this gap between the public's stated values and their actual behaviours is essential."[448]

Carol Saunders, et al. note: "The transition to global sustainability will require changes in human values, attitudes, and behaviors."[449] They identify some of the obstacles to behaviour change as including:

> … the direction and strength of attitudes, insufficient individual capabilities, social norms and cultural beliefs, incentives or disincentives, and structures such as laws, regulations, technology, and the broader socioeconomic and political context.[450]

They note that the model of planned behaviour developed by Ajzen is often applied to environmental behaviour. This model suggests that "attitudes are most likely to predict behavior when the level of specificity of the attitude matches that of the behavior, when a person perceives that social norms support the behavior, and when the person thinks he or she is able to do the appropriate behavior."[451] Saunders, et al. also note that more recently psychologists have focused on a broader set of predictors in which strong attitudes, developed through " a thoughtful process," and which are consistent with emotions and values, "are most likely to predict behavior."[452]

Swedish researchers Nordlund and Garvill have developed and tested a model, through a survey questionnaire, that confirms that general values influence environmental values, problem awareness, personal norm, and proenvironmental behaviour (these latter terms are defined presently).[453] We include this study here, in some detail, as an example of the types of sustainability values with which we are concerned.

Personal norm, in this study, is seen as a feeling of moral obligation to protect the environment. Proenvironmental behaviour is seen as behaviour that often involves a choice between acting in one's own immediate interest or acting in the long-term interest of the collective or the environment, when the choice may have negative personal

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[447] Ibid., accessed. p. 8.

[448] Ibid., accessed. p. 1.

[449] Saunders, Carol D., Amara T. Brook, and Olin Eugene Myers Jr. "Using Psychology to Save Biodiversity and Human Well-Being," *Conservation Biology*, vol. 20, no. 3, 2006: 702-705. p. 703

[450] Ibid.

[451] Ibid. citing Ajzen, I. "The Theory of Planned Behavior," *Organizational Behavior and Human Decision Processes*, vol. 50, 1991: 179-211.

[452] Saunders, Brook, and Myers Jr. "Using Psychology to Save Biodiversity and Human Well-Being." p. 703.

[453] Nordlund, Annika M., and Jorgen Garvill. "Value Structures Behind Proenvironmental Behavior," *Environment and Behavior*, vol. 34, no. 6, 2002: 740-756.

consequences such as inconvenience, higher material cost, or the need to change habits.[454]

Nordlund and Garvill hypothesized that, in previous research where a weak relationship between values or general attitudes and proenvironmental behaviour was found, the focus was on levels of abstraction that were not directly related to specific situations calling for specific behavioural responses. Their model, derived from previous research on general and environmental values and behaviour, identifies a pattern of relations between values and proenvironmental behaviour. Specifically, general values influence environmental values, both general values and environmental values together influence problem awareness, values and problem awareness influence personal norm, and personal norm influences behaviour. Nordlund and Garvill note that the results of the study mirror those found in social value orientation research.

> According to the norm activation theory, an important antecedent to proenvironmental behavior is the activation of a personal moral norm. This activation takes place when the individual perceives environmental conditions that threaten something the individual values (nature, other humans' well-being, one's own well-being); that is, the individual is aware of environmental problems. The personal norm, experienced as a moral obligation to act to protect whatever is threatened, is derived from the individual's relevant general and environmental values. Thus, we expected the individual's general and environmental value orientations to influence the personal norm […]. The results showed that the effects of general and environmental values and problem awareness on proenvironmental behavior are mediated by the personal norm and that the personal norm can be viewed as an important general predisposition to act in a proenvironmental manner.[455]

Nordlund and Garvill used a mail-back questionnaire to survey 1,414 respondents in Sweden, of whom 53% were women and 47% were men. The mean age was 41.03 years; 41% of the women respondents had higher education credentials, and 37% of the men had higher education credentials.

General value orientation was assessed using the Swartz Value Inventory Scale, which asks respondents to rate, on a 9-point Likert-type scale, the degree that 24 values function as a guiding principle in their lives. Value types are described by two dimensions representing opposing views: *self-transcendence*, which is more concerned with collective interests and which combines the value types of universalism and benevolence, and *self-enhancement*, which is more concerned with individual interests and combines the value types of power and achievement.

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[454] Ibid. pp. 751–752.
[455] Ibid. pp. 745, 751.

- *Self-enhancement* (individualism) is represented by nine values: "social power, wealth, social recognition, authority, self-respect, ambitio[n], influen[ce], capab[ility], and success."
- *Self-transcendence* (collectivism) is represented by 15 values: "equality, a world at peace, unity with nature, wisdom, a world of beauty, social justice, broad-minded[ness], a protected environment, mature love, true friendship, loyalty, honesty, helpfulness, responsibility, and forgiv[ness]."[456]

The authors note:

> Several studies have shown that people who give priority to collective, or self-transcendent, values are more willing to engage in different forms of altruistic, cooperative, or proenvironmental behavior than people who give priority to individual or self-enhancement values.[457]

The next part of the questionnaire consisted of 21 statements and respondents were asked to indicate the degree to which they agree or disagree with the statement. Six statements assess the environmental values of ecocentrism and anthropocentrism, 12 statements on the questionnaire assess awareness of environmental problems, and three statements assess personal norm. Examples of the 21 statements are as follows:

- environmental values:
  - ecocentrism (3 statements)— "[I]t makes me sad to see natural environments destroyed."
  - anthropocentrism (3 statements)—"[T]he thing that concerns me most about deforestation is that there will not be enough lumber for future generations."
- problem awareness (12 statements)—Awareness of negative consequences:
  - for people in general (social)—"[H]ealth effects from environmental pollution are more serious than we believe."
  - for the person himself or herself (egoistic)— "[L]aws for environmental protection decrease my freedom of choice."
  - for the biosphere (biospheric)—"[D]uring the years to come, thousands of species will become extinct."
  - general consequences—"I am worried about environmental problems."
- personal norm regarding environmental protection (3 statements)—"I feel a moral obligation to relieve the environmental problems."[458]

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[456] Schwartz, Shalom H. "Universals in the Content of and Structure of Values: Theoretical Advances and Empirical Tests in 20 Countries," *Advances in Experimental Social Psychology*, vol. 25, 1992: 1-65. cited in Nordlund, and Garvill. "Value Structures Behind Proenvironmental Behavior." p. 747.

[457] Nordlund, and Garvill. "Value Structures Behind Proenvironmental Behavior." p. 743.

[458] Ibid.

To assess proenvironmental behaviours, respondents are asked how often (regularly, sometimes, rarely, and never) they perform 25 different behaviours that represent different domains of everyday behaviours. For example:

- recycling / reusing (13 items, e.g., "recycling of paper, plastic, and metal")
- environmentally responsible consumption (7 items, e.g., "buying environmentally friendly products")
- energy conservation (3 items, e.g., "saving hot water in the household")
- transportation behavior (2 items, e.g., "using […] modes of transportation [other] than automobile")[459]

As expected, the results of the survey support the pattern of relationships between values and proenvironmental behaviour hypothesized by the authors. Specifically, the results show a positive correlation between the dependent variable of proenvironmental behaviour and the independent variables of self-transcendence, ecocentrism, awareness of problems, and personal norm, which, in turn, showed a strong positive effect on proenvironmental behaviour. Self-transcendence had no effect on anthropocentrism. A positive correlation was found between self-enhancement and anthropocentrism, which was negatively or not significantly related to ecocentrism, problem awareness, personal norm, and proenvironmental behaviour. The authors expand upon this correlation:

> Individuals who gave priority to self-transcendent values were more aware of the threats to the environment and perceived a stronger moral obligation to act to protect the environment than individuals who gave priority to self-enhancement values […]. In this study, the personal norm can be seen as derived from self-transcendent and ecocentric values and activated by the problem awareness […]. Thus, the results in the present study indicate that for environmentally significant everyday behaviors, it is meaningful to talk about a general disposition to act to protect the environment and toward general proenvironmental behavior.[460]

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[459] Ibid. p. 747.
[460] Ibid. pp. 752–753.

5.3 Value-basis of an ecologically sustainable future

Values, or belief-systems and worldviews, influence how one views and behaves in the world. Learning in general is also influenced by values, worldviews, and cultural assumptions, and how those underlying values are transmitted. Learning values operates at deeper and subtler levels than that of learning information about the external world, which is normally associated with concepts of education. So deep and pervasive are these worldviews and assumptions that they are generally not recognized as such, and alternatives are frequently not even conceived. According to C.A. Bowers, critical thinking or pedagogy taught in schools does not go far enough, since the value basis of critical thought is rarely questioned.[461]

Physicist and author Jeremy Hayward observes some of these unquestioned cultural assumptions, and notes that there is now a general agreement on the following three points among philosophers of science, who have moved past the general "correspondence theory of truth," which views "truth" as totally objective. In this consensus, observations, meanings of descriptive terms, and facts are all "theory laden," and dependant on the associated values or belief systems of those holding the values. He defines these three points as follows:

- Observations are theory laden. The belief system influences how one views, describes, or interprets the world. Therefore, what one observes depends on one's theories and expectations.
- Meanings are theory dependent. The meanings of descriptive terms (e.g., electron, wave) used in a theory change as the theories change. Therefore, as theories change, the 'real things' which they purport to be about to some extent change their qualities as well.
- Facts are theory laden. What counts as a fact depends on the belief system associated with a theory and, therefore, ultimately, on the group decision of the community of scientists holding this belief system. Facts are not the ultimate standard of 'reality.'[462]

Hayward presents many examples of these three points, but the main issue is that the state of the world is a reflection of human values, knowledge, and activities, rather than the inevitable unfolding of objective "truth." This raises the issue, as Michael Bonnett notes, of the nature of Western rationality, and its ability to understand environmental issues when it is divorced from considerations of value and the non-rational aspects applicable

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[461] Bowers. *Mindful Conservatism: Rethinking the Ideological and Educational Basis of an Ecological Sustainable Future*.
[462] Hayward, Jeremy. *Perceiving Ordinary Magic: Science & Intuitive Wisdom*, Boston: Shambhala Publications, 1984. pp. 76–77.

to these issues such as empathy, identification with nature, and the broader spiritual dimension.[463]

Educator and author C. A. Bowers argues in his book, *Mindful Conservatism,* that assessments of social and economic choices should be based on whether or not these actions contribute to or further destroy an ecologically sustainable future.[464] In order to do this, he asserts, we need to ask difficult questions that may threaten the status quo and, in doing so, overcome deeply ingrained cultural assumptions. Bowers suggests that knowledge needs to be organized in terms of a different set of cultural assumptions and cultural values than those currently taught in education systems.[465] He argues, as noted by Stephen Fain, et al. that the current values taught, whether explicitly or implicitly, contradict the idea of sustainability:

> [T]he current aim of education is to prepare students to enter an economic system that is incompatible with the Earth's survival. Instead of solely reproducing the existing culture, [Bowers] proposes that education should support cultural change that focuses on environmental sustainability.[466]

As noted in Chapter 1, Bowers records that there are three main assumptions or cultural practices and patterns of thinking that are accepted without further thought, that form the basis of Western thinking, and that are taught in schools. These assumptions are also translated into educational, governmental, corporate, and family policies. However, these values or assumptions, Bowers believes, are unsustainable and responsible for ecological destruction. He suggests: "Adding environmental issues to courses that students who may assume leadership positions in the future take will do little good if the underlying cultural, taken-for-granted interpretative framework is not changed."[467]

Although Bowers is speaking specifically about the U.S., analysts also question whether these values are also increasing found in Canada and other Western nations.[468] These main cultural assumptions or values, which Bowers also calls "root metaphors" that co-evolved with the Industrial Revolution, include:

- **Individuality**—or a view that sees the individual as the basic social unit without regard to the interdependent nature of reality. According to Bowers, the view of

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[463] Bonnett, Michael. "Education for Sustainability as a Frame of Mind," *Environmental Education Research*, vol. 8, no. 1, 2002: 9-20.

[464] Bowers. *Mindful Conservatism: Rethinking the Ideological and Educational Basis of an Ecological Sustainable Future*.

[465] Ibid.

[466] Bowers. *The Culture of Denial*. cited in Fain, Barantovick, and Martin. "The Aims of Education in an Age of Stasis and Change." p. 9.

[467] Bowers. *Mindful Conservatism: Rethinking the Ideological and Educational Basis of an Ecological Sustainable Future*. p. 165.

[468] Romanow, Roy J. "A House Half Built. A Former Premier Argues That Canada Must Return to Its Nation-Building Roots," *The Walrus*, vol. 3, no. 5, 2006: 48-54.

the importance of the "autonomous individual" undermines "cultural self-sufficiency" and "networks of mutual support that represent alternatives to today's growing reliance on the market."[469]

- **Anthropocentrism**—an anthropocentric view of the world that sees humans as "the focus of all knowledge, creativity, and intelligence, [which] negates the importance of culture, tradition and ecology." The current anthropocentric pattern of thinking about the natural environment "casts the environment as an economic resource or as a totally irrelevant factor when thinking about educational reform."[470]
- **Current view of progress**—a view that sees change as inherently progressive and good, which "denies the importance of traditional ways of knowing, including indigenous knowledge and rituals."[471] Bowers notes that "the keystone holding this symbolic structure together is the assumption that constant cultural changes are the expression of a linear form of progress. Indeed, this framework leads to equating the rate of change with the rate of progress and thus the drive to increase the rate of change through technological innovations."[472]

Bowers argues that in order "to conserve the self-sustaining capacity of the Earth and the resilience of diverse cultures," as well as the public commons, Western cultures need to change in six fundamental ways:

1. from so-called autonomous individuals to human beings embedded and sustained through relationships and dependent on nature
2. from ego-centred individuals to human beings owning up to responsibilities toward nature as well as past, present, and future generations
3. from so-called culturally neutral […] universal technology to the appreciation of cultural and social embeddedness of any application of technology, its true costs and benefits, the responsibilities of scientists, and the over-arching importance of the precautionary principle
4. from the commodification of everything to values that guarantee long-term sustainability of communities and nature
5. from the myth of 'development' to the recognition that overdevelopment and overconsumption are the prime reasons for the unsustainability of the Western model
6. from a monetised and consumption-orientated notion of wealth to one that centres around the life-enhancing qualities of what we do.[473]

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[469] Bowers. *Mindful Conservatism: Rethinking the Ideological and Educational Basis of an Ecological Sustainable Future*. p. 149
[470] Ibid. p. 156
[471] Ibid.
[472] Bowers. *Mindful Conservatism: Rethinking the Ideological and Educational Basis of an Ecological Sustainable Future*. p. 139
[473] Ibid. cited in Jucker, Rolf. "Review of Mindful Conservatism: Rethinking the Ideological and Educational Basis of an Ecologically Sustainable Future, by C. A. Bowers," *The Trumpeter*, vol. 19, no. 3, 2003: 118-120.

Alexander Lautensach, at the University of Ackland, New Zealand, also identifies "counterproductive values" as one of the causes of the environmental crisis:

> Current educational practice in the mainstream worldwide is not fulfilling its potentially pivotal role in counteracting the environmental crisis. Tertiary education has even been accused of contributing more to the problems than to their solutions. The shortfall is caused by the transmission of harmful or counterproductive values, beliefs and attitudes and by the failure to elicit more productive learning outcomes.[474]

In this case, learning outcomes are the "ecological concepts and the values, beliefs and attitudes that would provide the basis for sustainable living."[475] Lautensack proposes that to address this shortfall, education needs to redefine progress as striving toward sustainability, replace anthropocentric values with ecocentric values, and reorient education towards the future. In order to transform values into ones that foster sustainability, he suggests that this be pursued in four stages: developing a critical attitude among learners to question dominant values, acquiring the requisite cognitive skills to do so, adopting the new ecocentric values, and developing an attitude to act on one's values.[476]

Other analysts, such as Kiyo Izumi, have expressed these three cultural values as trends that might be symptomatic of a disconnection between values and the need for sustainability and wellbeing of both the human populace and the natural world.[477] Basically, these three analogous trends, which are fundamentally "facts of life," seem to be intensified in Western culture. The trends are indicators of:

1. a worldview increasingly based on self-absorption and individuality
2. the growing speed of change and the growing tendency to deny the reality of impermanence
3. a deepening of underlying pain and suffering, as seen in the increase of anxiety, fear, and stress in society

These trends are mentioned often in the literature. The first two trends, in fact, are widely encouraged within the business community, and are seen, for example, in the need to create individual desires for specific products to encourage economic growth, and in the perceived need to work and innovate faster than the competition in order to progress and survive. On the other hand, trends indicative of values more connected with the holistic

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[474] Lautensach, Alexander K. *A Tertiary Curriculum for Sustainability*, Paper presented at the Australian Association for Research in Education, Melbourne, November 29-December 2, 2004; University of Auckland, New Zealand, 2004; accessed March 2006; available from http://www.aare.edu.au/04pap/lau04260.pdf. p. 1.

[475] Ibid., accessed. p. 2.

[476] Ibid., accessed. p. 9.

[477] Izumi, Kiyo. "Cultural Issues and the Human-Made Environment," *The Trumpeter*, vol. 10, no. 4, 1993.

environment, and that are more in line with GNH values, include a worldview increasingly based on co-operation; a deepening understanding that progress does not necessarily involve speed; and a growing sense of happiness and wellbeing in society.

We look at each of these value systems below since these are the values some consider to be extremely important for sustainability and GNH.

5.3.1 Individual versus collective responsibility

Individuality and competition among individuals and groups is often so taken for granted in Western societies that alternatives, such as models of development based on co-operation and interdependence, are excluded. Roy Romanow argues that Canada is actually based on communitarian values, empathy, and careful attention to the needs of the public commons.[478] He suggests that "shared destiny" is "central to our national identity and to all political and social progress in Canada."[479] However, Romanow is concerned that "there is a palpable momentum toward decentralization, individualism, and privatization" and that "unbridled competition appears to be the new orthodoxy." He continues: "This potent mix could alter decades of successful national advancement and threaten Canada's collective prosperity."[480] In this literature review, we regard such deeper worldviews as co-operation and interdependence, and their origins and methods of transmission, as a key element of learning and education.

Geert Hofstede was one of the first researchers to model cultural research around the concept of individualism; with his book, *Culture's Consequences,* he has inspired researchers for the past two decades.[481] Hofstede defined individualism as a focus on rights above duties, a concern for oneself and immediate family, an emphasis on personal autonomy and self-fulfillment [over helping others], and the basing of one's identity on one's personal accomplishments."[482] Schwartz considers individualistic societies "as fundamentally contractual, consisting of narrow primary groups and negotiated social relations, with specific obligations and expectations focusing on achieving status."[483]

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[478] Romanow. "A House Half Built. A Former Premier Argues That Canada Must Return to Its Nation-Building Roots."
[479] Ibid. p. 50.
[480] Ibid.
[481] Hofstede, G. *Culture's Consequences*, Beverly Hills, CA: Sage, 1980.
[482] Ibid., cited in Oyserman, Daphna, Heather M. Coon, and Markus Kemmelmeier. "Rethinking Individualism and Collectivism: Evaluation of Theoretical Assumptions and Meta-Analyses," *Psychological Bulletin*, vol. 128, no. 1, 2002: 3-72. p. 4.
[483] Schwartz, Shalom H. "Individualism–Collectivism: Critique and Proposed Refinements," *Journal of Cross-Cultural Psychology*, vol. 21, 1990: 139–157. cited in Oyserman, Coon, and Kemmelmeier. "Rethinking Individualism and Collectivism: Evaluation of Theoretical Assumptions and Meta-Analyses." p. 4.

The alternative viewpoint is rarely transmitted and taught, either explicitly or tacitly, particularly in the U.S. Daphna Oyserman, et al. note that there is in fact a fundamentally different possible worldview than that generally taken for granted in the U.S., and that "the core element of collectivism is the assumption that groups bind and mutually obligate individuals."[484] The majority of studies on collectivism define it as a focus on relatedness to and altruism toward others, a feeling of interdependence, a striving for harmony and avoidance of conflict, and a sense of belonging. Oyserman, et al. note, however, that collectivism is not simply the opposite of individualism, since collectivism may refer to a broader range of values, attitudes, and behaviours than individualism. They suggest: "It is probably more accurate to conceptualize individualism and collectivism as worldviews that differ in the issues they make salient."[485]

The Royal Commission on the Economic Union and Development Prospects for Canada (MacDonald Commission) produced a major report in 1984, which asserted that competition formed the base of Canadian society, and that conflict was part of the social order that needed to be accommodated within the social structure:[486]

> We also live in a society that, like other successful societies, values competition and, indeed, relies upon it for basic protection: our judicial, electoral, parliamentary and economic systems are all based on competition, and in large measure, are deliberately adversarial.[487]

In response to this report, the Canadian Congress for Learning Opportunities for Women (CCLOW) asserted:

> When competition is valued, differences are emphasized and similarities and common purposes are overlooked. Individualism and self-reliance are emphasized and community, sharing and co-operation ignored. It is no coincidence that the Commission placed self-reliance at the top of its list of the main aspirations of Canadians. This is not to say that individualism and self-reliance must not be valued in our society. However, an emphasis on self-reliance must be balanced with an equal emphasis on co-operation—Canadians working together to achieve self-reliance as individuals and as a collective.[488]

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[484] Oyserman, Coon, and Kemmelmeier. "Rethinking Individualism and Collectivism: Evaluation of Theoretical Assumptions and Meta-Analyses." p. 5.

[485] Ibid. p. 5.

[486] Royal Commission on the Economic Union and Prospects for Canada. *Challenges and Choices*, Ottawa: Minister of Supply and Services, Canada, 1984.

[487] Ibid. p. 28, cited in Canadian Congress for Learning Opportunities for Women (CCLOW). *A Response to Challenges and Choices, Submitted to the Royal Commission on the Economic Union and Development Prospects for Canada*, 1984; accessed December 2005; available from http://www.nald.ca/canorg/cclow/doc/the_royl/Cover.PDF.

[488] Canadian Congress for Learning Opportunities for Women (CCLOW). *A Response to Challenges and Choices, Submitted to the Royal Commission on the Economic Union and Development Prospects for Canada*, accessed. p. 4.

In 1995, Suzanne Peters of the Canadian Policy Research Networks (CPRN) examined 15 years of data collected from 50 polls taken between 1980 and 1995, to examine Canadian values. Peters notes: "Collective responsibility reflects the democratic contract and an ecological view of providing for others as a means to strengthen links across the chain of societal well-being."[489]

According to Peters, Canadians struggle to find a balance between self-reliance and collective responsibility. However, as seen in Figure 7 below, between 1980 and 1995, almost twice as many Canadians believed that Canadian society should be "a unified body pursuing a common goal" as believed it should be "a collection of people independently pursuing their own goals."

In 1987, the general public more often said that Canadians should have a common goal than did the elite (business and political leaders) public.

Figure 7. Percentage of Canadians who view ideal society as individualist or collectivist, by general or elite public, 1987
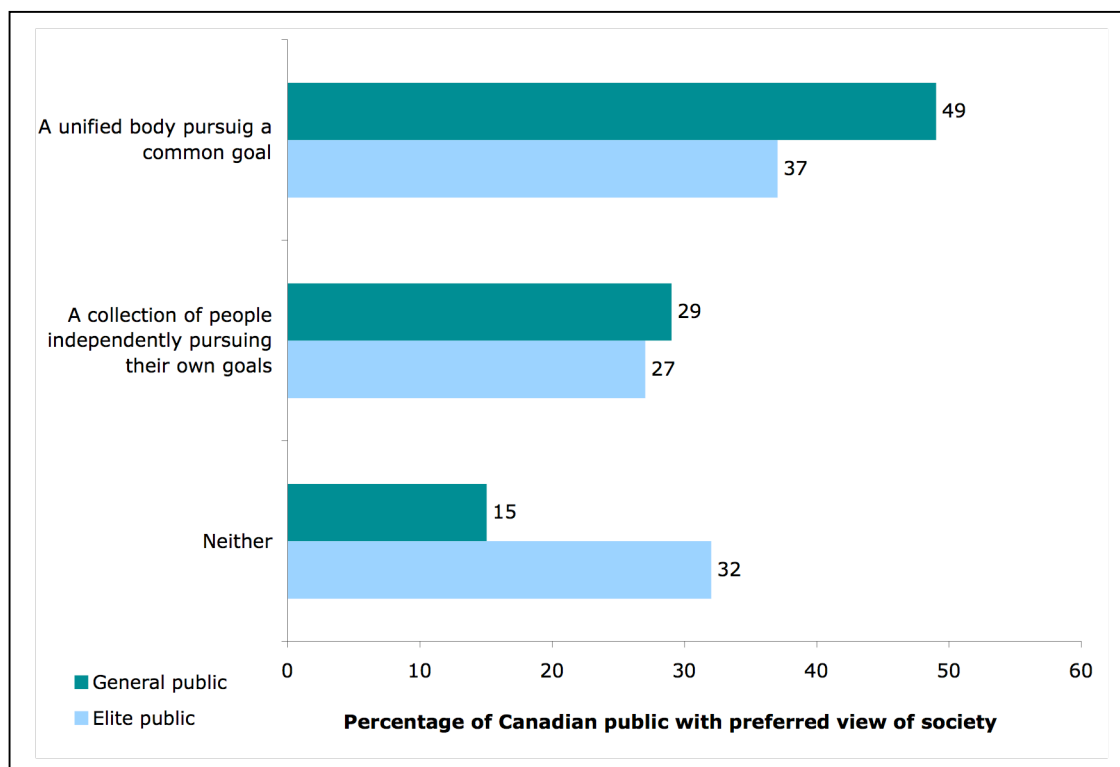
Note: "Elite public" is defined as those people who hold positions as business or political leaders.

[489] Peters, Suzanne. *Exploring Canadian Values: Foundations for Well-Being*, Ottawa: CPRN Study No. F-01, Canadian Policy Research Networks, 1995. p. 7.

Source: Institute for Social Research, "Attitudes toward Civil Liberties and the Canadian Charter of Rights," March-August 1987, cited in Peters, Suzanne. *Exploring Canadian Values: Foundations for Well-Being*. Ottawa: CPRN Study No. F-01, Canadian Policy Research Networks, 1995.

Peters also conducted 25 focus groups in eight Canadian cities. These focus groups considered and discussed conflicting value statements such as those concerning individual responsibility versus collective responsibility. Examples of statements made during the focus groups include:

- "We have a responsibility to take care of each other."
- "Life is what you make of it; if you sit back and do nothing, you can't expect life to be good."
- "People should not blame society for their problems because they're responsible for the choices they make."
- "Society has a responsibility to take care of those who can't take care of themselves."[490]

Focus group comments concerning these issues include the following examples:

- "In a democracy where we participate, I think the first premise that we have to make is that we're all responsible for the other guy."
- "Because if we don't, there's a breakdown in taking care of people. If there's a breakdown somewhere along the line, the repercussions become massive."
- "We have a responsibility as human beings in this country to take care of ourselves, to be educated, to be aware, and to contribute."
- "The country is only as healthy as the poor in the country."[491]

On the other hand, Donald Taylor, from McGill University, maintains that Canadian values tend to be individualistic, and place a premium on individual autonomy and achievement, although he notes that there is a current struggle in Canada over individual versus collective rights.[492] The 1999 Environics 3SC Social Values Monitor Survey of 2,600 Canadians ages 15 and over measured traditional versus modern values and whether people were "self" or "other" directed.[493] This survey, which has been conducted annually since 1983, includes over 250 questions that measure more than 75 values,

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[490] Ibid. p. 3.

[491] Ibid. p. 7.

[492] Taylor, Donald M. *Diversity with Justice and Harmony: A Social Psychological Analysis: Emerging Themes*, Strategic Policy, Planning and Research and Metropolis Project, Citizenship and Immigration Canada, 1996; accessed December 2005; available from http://canada.metropolis.net/research-policy/litreviews/tylr_rev/tylr_rev-09.html - EMERGING.

[493] Adams, Michael. *Sex in the Snow*, Pre-Conference Paper for the Alberta Recreation and Parks Association Conference, 24 October 1999. Environics Research Group, 1999; accessed December 2005; available from http://www.lin.ca/lin/resource/html/mm11/sld051.htm.

motivations, and socio-cultural characteristics. The survey found that Canadians were moving from being "traditional other directed" to "modern self directed."
According to Oyserman, et al., most Western societies value individualism more than they value collectivism.[494] In fact, Oyserman, et al. declare, "To contemporary Americans, being an individualist is not only a good thing; it is a quintessentially American thing."[495] They conducted a meta-analysis of 83 studies on individualism-collectivism (IND-COL) to determine whether (European) Americans were more individualistic and less collectivistic than members of other groups and nations. In their analyses, the authors stress that they include as American both Canada and the United States, since "the field clearly assumed an approximate equivalence between the cultures of Canada and the United States in terms of IND and COL."[496] In addition, the authors found only one empirical study examining this assumption and it supported their own conclusion. Overall, the empirical evidence did find European Americans to be more individualistic—valuing personal independence more—and less collectivistic—feeling responsibility toward other—than other societies.

The meta-analysis conducted by Oyserman, et al. clearly articulates some ways in which IND and COL influence basic worldviews and values. They conclude:

> First, not everyone makes sense of the self in terms of high self-esteem or positive self-views, as Americans do. Second, far from being universally tied to IND or to COL, wellbeing is related to attaining culturally valued outcomes. In terms of attribution and cognitive style, not everyone spontaneously and persistently ignores contextual influence on human behavior as Americans do. Finally, people are likely to differ in what they understand to be reinforcing and rewarding and how they treat in-group as opposed to out-group members.

> Further, the body of cultural evidence does make clear the need to include relationality and desire for closeness to others as components of self-concept, well-being, and intergroup relations, whether considering these parts of a single psychology or as multiple psychologies. […] Americans are individualists as defined by their responses to IND scales, the way they define themselves, and what evidence they find convincing and motivating, but it is equally clear that Americans are relational and feel close to group members, seeking their advice.[497]

John Ralston Saul refers to "the loss of our sense of the *other*" as insanity.[498] He asks: "What is common sense if not shared knowledge? […] Shared knowledge or common sense lies at the core of any successful society."[499] Saul reminds us that the seventeenth

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[494] Oyserman, Coon, and Kemmelmeier. "Rethinking Individualism and Collectivism: Evaluation of Theoretical Assumptions and Meta-Analyses."
[495] Ibid. p. 3.
[496] Ibid. p. 6.
[497] Ibid. p. 45.
[498] Saul, John Ralston. *On Equilibrium*, Toronto: Penguin, 2001. p. 47.
[499] Ibid. p. 19.

and eighteenth century theory of happiness was an expression of the public good and of the public welfare:

[I]n the expression "life, liberty, and the pursuit of happiness", "happiness" is a reference to the public good, not a reference to savage individualism, meaning that you can go away and look after only yourself and make only yourself happy. It's the exact opposite of the idea, which is unfortunately generally understood around the world.[500]

Sean Cubitt also describes succinctly how the idea of the individual in Western societies is leading to "the emergence of the individual self as the final unit of society":

> [T]he individualistic model of subjectivity dominant in the West is a historical phenomenon not necessarily shared by all cultures in all times. The Western self is not constitutive of 'human nature' and has become in its own way something of a liability. In the collapse of the extended family and of the community of care in the West, the nuclear family has been called upon to provide the central support mechanism (as well as the core system of consumption) […]. But this system, plagued with the embarrassing statistics of single parenthood, non-procreative households and divorce, is clearly insufficient to live up to the demands placed on it. In its place, we can already see emerging, in the discourses of insurance sales, health promotion and aspirational advertising for example—those preeminently future-oriented discourses—the emergence of the individual self as the final unit of society. For me this was most clearly caught in a billboard for a health insurance company spotted in New York in 1990, featuring an athlete, and with the strapline 'Look After Yourself.' The implication: no one else will look after you.[501]

The individualistic worldview, so omnipresent in North America, in turn affects other elements of learning and education in ways that are more pervasive and penetrating than formal educational structures. Industrial societies have learned a great deal about how to create individual wealth, for example. However, as van Gelder and many others argue, they know very little about how to distribute this wealth and remove the material reasons for poverty so that all are cared for, including children.[502] Too often, our educational processes exclude learning on such distributional issues because they do not fit well into the pervasive worldview.

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[500] Saul, John Ralston. "Good Governance as the Key to Gross National Happiness." Paper presented at the Second International Conference on Gross National Happiness: Rethinking Development: Local Pathways to Global Wellbeing, Antigonish, Nova Scotia, June 20- 24, 2005; accessed December 2005; available from http://gpiatlantic.org/conference/proceedings/saul.htm. p. 5.

[501] Cubitt, Sean. "Mediation and the Future of Distributed Subjectivity," *Futures*, vol. 31, 1999: 827-834. pp. 831–832.

[502] van Gelder, Sarah Ruth. "Self and the Cultural Creatives," *Futures*, vol. 31, 1999: 822–826.

Competition and "survival of the fittest"

Observers note that the individualistic values of competition, aggressiveness, and "survival of the fittest" seem to be enshrined in Western society and are rarely questioned. John McMurtry comments that the demand for survival in the global market "has become a *regulating principle of consciousness* that even education administrators daily intone."[503] John D. Rockefeller, Sr. expressed this view and these values expressly: "The growth of a large business is merely a survival of the fittest [...]. It is merely the working out of a law of nature and a law of God."[504] In such statements, the reality that such views are not inevitable, but are learned, is not acknowledged.[505]

Most people in Western societies have been taught in school that Charles Darwin discovered the theory of evolution by natural selection, which has two parts—evolution and natural selection. These, in turn, have come to be known colloquially as "survival of the fittest." This view of natural selection as the survival of the fittest has become deeply rooted in the assumptions of Western culture. It is the view that nature is essentially hostile and that human nature is essentially selfish and must compete to survive. Very few biologists dispute the theory of evolution. Many contemporary biologists, however, consider the theory of natural selection, as the way in which evolution happens, to be incorrect.[506] These biologists see evolution as more like a "mutual creative game," rather than a struggle for survival.[507]

According to Jeremy Hayward, the theory of natural selection arose from Darwin's speculations on how evolution might work and by investigating its mechanism.[508] Apparently, Darwin read a book by economist Thomas Malthus called *Essay on the Principle of Population,* in which Malthus speculated that the population would grow larger than the food supply unless it was kept down by eliminating the poor and inept. Darwin, reading this, in turn speculated that evolution must be a response to low food supplies or scarcity of some other essential element; that there must be competition for these limited supplies; that the species that competes the hardest would gain an advantage that it could pass on to its offspring; and that this species would be "fitter" than those it

[503] McMurtry, John. "The Iconoclast: Dumbing Down with Globalization: The Ideology of Inevitable Revolution," *Canadian Social Studies*, vol. 35, no. 2, 2001; accessed July 2006; available from http://www.quasar.ualberta.ca/css/Css_35_2/iconclast_john_mcmurtry.htm.

[504] Rockefeller, John D., cited in Rifkin, Jeremy. *Algeny*, New York: Viking, 1983., cited in Hayward. *Perceiving Ordinary Magic: Science & Intuitive Wisdom*. p. 99.

[505] McMurtry. "The Iconoclast: Dumbing Down with Globalization: The Ideology of Inevitable Revolution."

[506] Hayward, Jeremy. *Letters to Vanessa: On Love, Science, Awareness in an Enchanted World*, Boston: Shambhala Publications, 1997.

[507] Stebbins, George Ledyard. *Darwin to DNA, Molecules to Men*, San Francisco: Freeman, 1982. cited in Hayward. *Letters to Vanessa: On Love, Science, Awareness in an Enchanted World*. p. 101.

[508] Hayward. *Letters to Vanessa: On Love, Science, Awareness in an Enchanted World*.

had vanquished. This speculation of needing to get rid of "the poor and inept" so that the fittest could get all the food and material goods and thereby survive, became known as "the survival of the fittest." Thomas Huxley then popularized this theory with statements such as: "So long as natural man increases and multiplies without restraint, so long will peace and industry not only permit, but necessitate, a struggle for existence as sharp as any that went on under the regime of war."[509]

However, natural selection explains some, but not all, phenomena observed in the biological world. In fact, there are many examples in the natural world of co-operation both between and among species. Pierre Grassé, ex-president of the French Academy of Sciences and one of the world's leading biologists, articulates a similar view:

> Their success among certain biologists, philosophers and sociologists notwithstanding, the explanatory doctrines (natural selection) of biological evolution do not stand up to an objective in-depth criticism. They prove to be either in conflict with reality or else incapable of solving the main problems involved.
>
> Through use and abuse of hidden postulates, of bold, often ill-founded extrapolations, a pseudoscience has been created. It is taking root in the very heart of biology and is leading astray many biochemists and biologists, who sincerely believe that the accuracy of fundamental concepts has been demonstrated, which is not the case.[510]

Jeremy Hayward, in writing about the influence of Darwin in Western society, comments:

> [J]ust as Newton's laws were bloated into metaphysical principles as to the final nature of time, space, and matter, so natural selection has been bloated into a principle of explanation of phenomena far beyond its scope. The idea that nature was fundamentally based on a 'struggle for life' and that man was part of that struggle was promoted into a social philosophy and an explanation of human nature that was at the very heart of the industrial revolution and that continues today in the world of business, economics, education, and international relations.[511]

What is interesting in the context of this literature review on education is that the view of struggle and inherent competitiveness, rather than collectivism and interdependence, has entered our society and collective consciousness through learning processes that are

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[509] Huxley, Thomas. "The Struggle for Existence in Human Society," in *The Nineteenth Century*, 1888. cited in Hayward. *Letters to Vanessa: On Love, Science, Awareness in an Enchanted World*. p. 100.
[510] Grassé, Pierre. *Evolution of Living Organisms*, New York: Academic Press, 1977. cited in Hayward. *Perceiving Ordinary Magic: Science & Intuitive Wisdom*. p. 99.
[511] Hayward. *Perceiving Ordinary Magic: Science & Intuitive Wisdom*. p. 98.

subtle and pervasive and not necessarily based on evidence. The point, as Jeremy Hayward demonstrates, is not that the fittest survive, but that "the theory that *all* evolution occurs mainly through struggle, elimination of the weakest by the strongest, competition, and aggression, *is completely unsupported by scientific evidence.*"[512]

Hayward presents many examples to show that co-operation, mutual aid, caring, kindness, and a deep sense of harmony among organisms are the rule rather than the exception within the same species, and are also common between species as well. Well-known biologist Lewis Thomas affirmed this observation when he wrote: "The urge to form partnerships, to link up in collaborative arrangements is perhaps the oldest, strongest, and most fundamental force in nature. There are no solitary, free-living creatures, every form of life is dependent on other forms."[513]

Fleet Maull, founder of the National Prison Hospice Association, has developed an Empowerment Model of rehabilitation, which is based on a belief in interconnectedness and basic human goodness and which builds on a person's strengths rather than trying to change weaknesses.[514] The unique focus of this learning model is the importance of service in rehabilitating prisoners. As Maull argues: "Service provides prisoners with a path or a way to go beyond their own concerns, to make a difference and contribute to other people's lives."[515] Maull worked and lived with prisoners for over 14 years and argues from personal experience that he has no doubt that the fundamental nature of all human beings is good, including those who are "murderers, rapists, bank robbers, child molesters, tax dodgers, drug dealers, and every sort of criminal imaginable." He maintains that, "Not only is our core being essentially good, but we all have tremendous kindness, compassion and natural empathy towards the world and ourselves."[516] This natural compassion and empathy, which would apply not only to prisoners but to all of humanity, appears to reinforce a collectivist, co-operative worldview rather than a competitive, individualist one, and demonstrates how learning structures can be built on and reflect such a worldview.

Analysts are not suggesting here that looking after one's self is not important. Effectively taking care of one's needs and realizing one's potential is what Jung called *individuation* or the growth of the full individuality of a person into unity and wholeness.[517] Rather, it is the *individualistic* mind-set of Western culture that separates us from and inhibits our connectedness with our world and our fellow human beings that these observers are questioning. Despite the deeply learned and ingrained individualistic worldview, the biological evidence actually points to a model of co-operation and service to others as being innately more "successful" than a model that promotes competition.

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[512] Hayward. *Letters to Vanessa: On Love, Science, Awareness in an Enchanted World*. p. 99.
[513] Ibid. pp. 102–103.
[514] Maull, Fleet. *Dharma in Hell*, Boulder: Prison Dharma Network, 2005.
[515] Ibid. p. 114.
[516] Ibid. p. 121.
[517] Jung, C. G., and M.-L. Franz, eds. *Man and His Symbols*. Garden City, N.Y., Doubleday, 1964.

5.3.2 Current view of progress

Values can influence learning processes and outcomes in ways that are at least, if not more, profound than formal education structures, which themselves influence values. According to Lautensach, there is abundant published evidence to support the view that:

> The unsustainable and counterproductive behaviour of the vast majority of people in rich countries is informed by beliefs, attitudes and values that amount to a dominant concept of progress […]. It guides decisions and behaviour at the level of the individual, communities and societies, resulting in detrimental omissions and commissions.[518]

The dominant concept of progress, Lautensach argues, includes:

> … several counterproductive ideologies such as consumerism […] and scientism. Contained in those ideologies are misleading beliefs such as progress being identical with economic growth, the potential of *laissez-faire* policies to bring about such progress, and the absence of limits to quantitative growth.[519]

Roy Romanow, in a recent article concerning the state of Canada, remarks:

> Since the 1980s, there has been a gravitational pull to the monetarist school of economics, with its near-total faith in the wisdom of the market […]. Profit, not human prosperity, is now declared to be our primary national purpose, and efforts to mitigate the worst consequences of global trade and competition are muted or non-existent […]. In fact, most of the attrition in Canada's social infrastructure took place during a period of sustained economic growth.[520]

Lautensach views this dominant concept of progress as one of the root causes of unsustainable behaviour and suggests that education can play a large role in changing this concept to one that can inform more sustainable behaviour. Lautensach also notes: "An important cognitive learning outcome is the understanding that in all processes of growth the transition from expansion to restraint inevitably becomes an imperative at some stage."[521] He adds that adopting personal values of sustainability would result in behavioural learning outcomes that can be assessed.

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[518] Lautensach. *A Tertiary Curriculum for Sustainability*, accessed. p. 2.
[519] Ibid., accessed. p. 6.
[520] Romanow. "A House Half Built. A Former Premier Argues That Canada Must Return to Its Nation-Building Roots." pp. 51–52.
[521] Lautensach. *A Tertiary Curriculum for Sustainability*, accessed. p. 7.

Elliott and Lamm, writing for the *Chronicle of Higher Education,* argue that "any ethical system is mistaken and immoral if its practice would cause an environmental collapse." They continue:

> Today, our standard of living, our economic system, and the political stability of our planet all require the increasing use of energy and natural resources. In addition, much of our political, economic, and social thinking assumes a continuous expansion of economic activity, with little or no restraint on our use of resources. We all feel entitled to grow richer every year. Social justice requires an expanding pie to share with those who are less fortunate. Progress is growth; the economies of developed nations require steady increases in consumption.

> Every environment is finite […]. Economic growth can be beneficial when land, fuel, water, and other needed resources are abundant. But it becomes harmful when those resources become scarce, or when exploitation causes ecological collapse. Every finite environment has a turning point, at which further economic growth would produce so much trash and pollution that it would change from producing benefit to causing harm. After that point is reached, additional growth only increases scarcity and decreases overall productivity. In conditions of scarcity, economic growth has a negative impact.[522]

The authors also believe that very few people understand the nature of steady growth:

> Any rate of growth has a doubling time: the period of time it takes for a given quantity to double. It is a logical inevitability—not a matter subject to debate— that it takes only a relatively few doublings for even a small number to equal or exceed any finite quantity, even a large one. One way to look at the impact of growth is to think of a resource that would last 100 years if people consumed it at a constant rate. If the rate of consumption increased 5 percent each year, the resource would last only 36 years. A supply adequate for 1,000 years at a constant rate would last 79 years at a 5 percent rate of growth; a 10,000-year supply would last only 125 years at the same rate. Just as no trees grow to the sky, no growth rate is ultimately sustainable.

> Because the natural resources available for human use are finite, exponential growth will use them up in a relatively small number of doublings. The only possible questions are those of timing: When will the resources be too depleted to support the population? When will human society, which is now built on perpetual growth, fail? The mathematics makes it clear: Any human activity that uses matter or energy must reach a steady state (or a periodic cycle of boom and bust, which over the long run is the same thing). If not, it inevitably will cease to

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[522] Elliott, Herschel, and Richard D. Lamm. "A Moral Code for a Finite World," *The Chronicle of Higher Education*, no. November 15, 2002; accessed March 2006; available from http://chronicle.com/free/v49/i12/12b00701.htm. pp. 1–2.

exist. The moral of the story is obvious: Any system of economics or ethics that requires or even allows steady growth in the exploitation of resources is designed to collapse. It is a recipe for disaster.[523]

The value of progress is enshrined in Western culture as a view that, as Bowers notes, sees change itself as inherently progressive and good, despite what this change is progressing toward. In this view, having and creating "more" are themselves a sign of progress, and the faster this change can be achieved, the better. Bowers adds: "Indeed, this framework leads to equating the rate of change with the rate of progress and thus the drive to increase the rate of change through technological innovations."[524]

Change and impermanence are facts of life, and everything in life is subject to change, but change, in itself, does not necessarily indicate genuine progress. As Williams notes, when change is too rapid, for example, it can inhibit learning, undermine genuine education, and generate social and economic problems both for individuals and societies.[525] Francis Heylighen remarks:

> It seems that the biggest problem facing present-day society is not that there is too little progress, but rather too much of it. Neither our mind, our physiology nor our social and philosophical systems seem fit to cope with such a rate of change and such an amount of new information. The resulting experience of ever increasing complexity in all domains of society may contribute to alienation, a feeling of powerlessness, meaninglessness and lack of understanding.[526]

Jerzy Wojciechowski argues that the changes presently being experienced in Western culture are not accidental, but are due, in large part, to the reliance on rational activity for the development of knowledge.[527] This can be seen, he believes, in the current state of the planetary ecosystem or in past innovations such as the nuclear bomb, knowledge is not necessarily "harmoniously related to humanity." It appears that the rapid development of scientific knowledge can outrun the human capacity to use it wisely. This reality again casts doubt on the conventional assumption that simple accumulation of information and knowledge development signal genuine attainment and progress. Wojciechowski observes that this rapid knowledge development produces cultural change that is self-accelerating:

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[523] Ibid. p. 3.
[524] Bowers. *Mindful Conservatism: Rethinking the Ideological and Educational Basis of an Ecological Sustainable Future*. p. 139
[525] Williams, Dai. "Human Responses to Change," *Futures*, vol. 31, no. September, 1999: 609-616.
[526] Heylighen, Francis, and Jan Berheim. *Global Progress II: Evolutionary Mechanisms and Their Side-Effects*, Center "Leo Apostel", Free University of Brussels, 2000; accessed January 2005; available from http://pespmc1.vub.ac.be/Papers/ProgressI&II.pdf. p. 45.
[527] Wojciechowski, Jerzy A. *The Ecology of Knowledge*, Cultural Heritage and Contemporary Change, Series 1. *Culture and Values*, Vol. 23, The Council for Research in Values and Philosophy, 2001; accessed December 2005; available from http://216.25.45.103/book/Series01/I-23/contents.htm. Chapter 5.

The more dynamic knowledge is, the more and faster will culture change. In the situation of highly developed, dynamic knowledge, cultural changes […] are produced from within the culture, by its internal dynamism and not, as in the situation of less developed knowledge, under the impact of uncontrollable external forces, whether natural or human. The more developed and dynamic is knowledge in the given culture, the more self-induced are the changes which this culture undergoes. A dynamic culture forms a self-evolving system, which is self-complexifying and self-accelerating in its evolution. If one wishes to understand cultural change in general, and in particular in the case of contemporary Western culture, one must first assess the principal factor which produces this change, namely, knowledge.[528]

This is ironic, since the rapid accumulation and development of knowledge that is conventionally considered a sign of progress is here identified as a root cause of profound social problems, which in turn points to the need for better indicators of educational attainment that account for values and more far-reaching outcomes.

Gross Domestic Product

Progress can be viewed from many perspectives including that of economic imperatives. The Gross Domestic Product (GDP) is the most important indicator of progress used by Western societies, and as such, indicates a worldview that equates an increase in productivity with progress in society. Conventional wisdom holds that if the GDP grows, people are better off and society benefits. But the evidence does not support this assumption. Higher levels of growth and output in the industrialized world have not necessarily increased levels of satisfaction, wellbeing, and economic security. For example, in l998, when Canadians were polled about how their financial situation compared to that of their parents at the same stage in life, less than half (44%) answered there had been an improvement—despite an increase of approximately 60% in real GDP per capita over the previous 25 years.[529]

In a recent report by the Worldwatch Institute, while economic indicators are on the rise, human activity is resulting in ecosystem decline that will have disruptive and potentially irreversible consequences:

In 2005, more steel and aluminum were produced than ever before, vehicle production reached a record 45.6 million units, and gross world product reached a record $59.6 trillion […]. However, while these trends point to unprecedented

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[528] Ibid., accessed. Chapter 5, p. 2.

[529] Osberg, Lars , and Andrew Sharpe. "Comparisons of Trends in Gross Domestic Product and Economic Wellbeing – the Impact of Social Capital," in *The Contribution of Human and Social Capital to Sustained Economic Growth and Wellbeing*, ed. Helliwell, John F. Ottawa: Human Resources Development Canada, 2001.

levels of commerce and consumption, they are set against a backdrop of ecological decline in a world overwhelmingly powered by fossil fuels.[530]

What does this apparent anomaly tell us? GDP per capita was much lower 30 years ago than it is today, but are we better off today than we were in l975? In the l970s, jobs were generally more secure. Crime rates were lower and we were less likely to lock our doors and cars. Atlantic groundfish stocks had not yet collapsed as they did in the early 1990s, throwing 40,000 people out of work and devastating coastal communities. In the l970s fewer people questioned whether we could afford social programs, and the level of personal debt was much lower. Indeed, today millions of Canadians' consumption exceeds their income. Because GDP only measures total income (not how it is shared or distributed), it can grow even while most people are losing real income—as occurred in Canada in the 1990s.[531] In sum, the economy (and the GDP) can grow even as poverty, insecurity, and inequality increase, while the gap between rich and poor widens, while the earth's resources are depleted, while communities collapse, and while quality of life worsens.

Roy Romanow muses:

> I sometimes think that GDP must stand for Gross Distortion of Prosperity, because it provides a very misleading picture of our national wellbeing. It certainly was not created as a measure of wellbeing but it is often taken as a sign of "how we are doing" as a nation.[532]

The Gross Domestic Product was never actually intended as an index of economic welfare or prosperity, as it is used today. It is essentially made up of two numbers—one counting the production of goods and the other the production of services within the borders of a country in a given period.[533] Its architects designed it as an aggregation of

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[530] The Worldwatch Institute. *Press Release: Vital Signs, 2006-2007. The Trends That Are Shaping Our Future*, Washington, D.C.: The Worldwatch Institute, 2006.

[531] See, for example, Dodds, Colin, and Ronald Colman, *Income Distribution in Nova Scotia.* (Halifax. GPI Atlantic. 2001.) Available at http://www.gpiatlantic.org/.

[532] Romanow, Roy. "Connecting the Dots: From Health Care to Illness and Wellbeing. A Speech Delivered on the Occasion of Receiving the International Foundation's Public Services Award," *Reality Check: The Canadian Review of Wellbeing,*, vol. 3, no. 2, 2003.

[533] Prior to the l980s the GNP (Gross National Product) was used to indicate economic performance. The GDP has been the official figure used since then. What is the difference? GDP measures all production that takes place within the borders of a country, regardless of who owns the units of production. The GNP measures national production, providing income to the citizens of the country, regardless of where production takes place. In Canada, for instance, a good deal of income flows out of the country because of the high levels of foreign ownership of domestic production. This means that the GNP is lower than the GDP. "Use of GDP over GNP masks the economic position of all countries having high levels of foreign ownership," writes Cosby. Furthermore, he argues that the shift toward the GDP was made to "mask the lopsided consequences of free trade and globalization, and thus make developing countries appear better off." Cosby, David. *A Genuine Progress Indicator for Canada: An Alternative to Growth as a Measure of Progress*, Alternative Federal Budget Papers. Ottawa: Canadian Centre for Policy Alternatives, 1997.

the market value of all goods and services, and it was first used as a measure of wartime production in Britain.[534] Simon Kuznets, Nobel Prize winner and one of the GDP's principal architects, never endorsed its modern use as an overall measure of progress, and he warned 40 years ago that "the welfare of a nation can scarcely be inferred from a measure of national income […]. Goals for "more" growth should specify of what and for what."[535]

Robert F. Kennedy, in a speech about America's moral vision, offered the following jeremiad:

> Too much and too long, we have surrendered community excellence and community values in the mere accumulation of material things […]. The GNP counts air pollution and cigarette advertising and ambulances to clear our highways of carnage. Yet the gross national product does not allow for the health of our children, the quality of their education, or the joy of their play. It measures neither our wit nor our courage; neither our wisdom nor our learning; neither our compassion nor our devotion to our country. It measures everything, in short, except that which makes life worthwhile.[536]

The GDP includes a variety of expenditures defending against, or mopping up after, events that could hardly be considered marks of progress or wellbeing—things like car accidents, crime, pollution, and disease. The money spent cleaning up a polluted site, for instance, is counted as a contribution to economic prosperity, rather than a cost of the activity that caused the damage in the first place. All spending is added to the GDP, whether or not it signifies an improvement in wellbeing. Under a sensible accounting system, in which environmental and social wellbeing are taken into account, liabilities like crime, pollution, and car crashes would register as costs rather than gains to the economy.

But instead, the GDP adds everything together, and never subtracts. In particular—in relation to the subject of this present study—our current measures of progress ignore major aspects of human capital that help create and sustain the economic system in the first place, such as education, skills, and human health. In l995, the World Bank started to include estimates of human capital in measuring a country's wealth, with its first rough estimates indicating that 59% of the wealth in developed countries was found in their

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[534] It was World War II that led to the use of the GDP as a measure of wartime economic activity. At the time, John Maynard Keynes, who played a central role in the British Treasury, penned a famous paper called "The National Income and Expenditure of the United Kingdom, and How to Pay for the War," which laid the groundwork for the use of the GDP as a tool to measure total economic performance. But even then it was not considered an accurate indicator of a nation's welfare. Cobb, Clifford, Ted Halstead, and Jonathan Rowe. "If the GDP Is up, Why Is America Down?" *The Atlantic Monthly*, October, 1995, 59-78.
[535] Kuznets, Simon. "How to Judge Quality." *The New Republic*, October 20, 1962, 29-32. cited in Cobb, Halstead, and Rowe. "If the GDP Is up, Why Is America Down?" p. 67.
[536] Kennedy, Robert. "Recapturing America's Moral Vision," in *RFK: Collected Speeches*, ed. Guthman, Edwin O., C. Richard Allen, Robert F. Kennedy. New York: Viking Press, 1993.

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human and social capital. Natural resources accounted for 25% of wealth, and manufactured capital for just 16%.[537]

For example, longer paid working hours make the GDP grow by increasing output and spending. But free time is not valued in our measures of progress, so its loss does not register anywhere in our accounting system. Given this imbalance, it is not surprising that the substantial economic productivity gains of the last 50 years have manifested in increased output and spending, while there has been no real increase in leisure time. [538]

Because the GDP fails to place a value on natural, human, and social capital assets, which are as subject to depletion and depreciation as produced or manufactured capital, it cannot accurately signal fluctuations in the nation's wealth. And because it ignores non-market benefits and costs, the GDP cannot send early warning signals to policy makers indicating when there is a need for re-investment in natural, human, and social capital. As economist Herman Daly notes, the GDP actually encourages the opposite—the further depletion of natural wealth; in his words, the "current national accounting system treats the earth as a business in liquidation.[539]

While the GDP mistakenly counts many costs and liabilities as if they were contributions to prosperity and wellbeing, it ignores many genuine benefits and contributions to wellbeing and quality of life, such as volunteer work, simply because no money is exchanged. Thus, paid child-care, hired domestic help, and restaurant food preparation all add to the GDP, while the economic values of unpaid child-care, housework, and home food preparation remain invisible in the economic accounts.[540]

Finally, in relation to the subject of this present study, the GDP may tell us how much is being spent on educational services, but it tells us nothing about educational attainment, the quality of the educational system, or whether a polulace, as a society, is becoming wiser or more knowledgeable.

These shortcomings and others led to a joint declaration by 400 leading economists and other experts, including Nobel Laureates:

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[537] Bank, World. *Monitoring Environmental Progress*, Washington, D. C., 1995. cited in Crittenden, Ann. *The Price of Motherhood*, New York: Henry Holt and Company, 2001.
[538] Pannozzo, Linda, and Ronald Colman. *Working Time and the Future of Work in Canada: A Nova Scotia GPI Case Study*, Halifax, Genuine Progress Index Atlantic (GPI Atlantic), 2004; accessed April 2004; available from http://www.gpiatlantic.org/.
[539] Cosby. *A Genuine Progress Indicator for Canada: An Alternative to Growth as a Measure of Progress*.
[540] Monetizing the value of unpaid work does not imply that unpaid work should be paid or taxed, nor that economic motives are found beneath the caring and giving work that constitutes a considerable portion of non-market production. Instead, the explicit acknowledgement that unpaid work has a quantifiable economic value indicates that the social support systems that enable its effective functioning should be viewed as essential social infrastructure rather than as potentially dispensable welfare measures. Colman, Ronald. *The Economic Value of Unpaid Housework and Child Care in Nova Scotia*, Genuine Progress Index Atlantic (GPI Atlantic), 1998; accessed December 2005; available from http://www.gpiatlantic.org/.

Since the GDP measures only the quantity of market activity without accounting for the social and ecological costs involved, it is both inadequate and misleading as a measure of true prosperity […]. New indicators of progress are urgently needed to guide our society […]. The GPI [Genuine Progress Index] is an important step in this direction.[541]

Effects of the growing speed of change and impermanence

As we have seen above, progress in the West is often equated with the speed of change. According to Heylighen, the main coherent thread interconnecting all of the visible signs of discord in society is the perception of speed.[542] Heylighen notes that competition in business encourages speed in order to get products to market before competitors, and to decrease the delay between innovations and their entry into the marketplace.[543] John Seely Brown, chief scientist of Xerox Corporation, has proposed "a Newton-like 'law' to describe the competitive dynamics of the knowledge economy":[544]

> Sustainable competitive edge can be seen as the differential rate of learning. It's a function of the number of people in the firm who learn differentially faster than competitors. In other words, in a time when both the rate of change and the growth of knowledge keep accelerating, the more people you have who can learn more in a shorter time, the more competitive you will be.[545]

According to the Royal Society of Canada, this mentality often leads to inadequate safety and environmental assessments of new products, and can create problematic side effects such as pollution and ill health.[546]

Consumer goods and energy in the form of natural resources and electricity are moved around the planet at increasing speeds. Meanwhile, as John Seely Brown notes, workers are pressured to work faster to beat the competition. Industry executives maintain: "Economic and social wealth in the New Economy increasingly depend on rapid

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[541] The full text and a complete list of signatories is available from Redefining Progress, 1904 Franklin St. 6th Floor. Oakland, California. 94612.

[542] Heylighen, Francis. *Complexity and Information Overload in Society: Why Increasing Efficiency Leads to Decreasing Control*, Free University of Brussels, 2002; accessed January 2005; available from http://pespmc1.vub.ac.be/Papers/Info-Overload.pdf.

[543] Ibid., accessed.

[544] Brown, John Seely. "Sustaining the Ecology of Knowledge," *Leader to Leader*, vol. 12, no. Spring, 1999: 31-36; accessed December 2005; available from http://drucker.org/leaderbooks/L2L/spring99/brown.html.

[545] Ibid. p. 35.

[546] Royal Society of Canada. *Elements of Precaution: Recommendations for the Regulations of Food Biotechnology in Canada: An Expert Panel Report on the Future of Food Biotechnology*, Health Canada, Canadian Food Inspection Agency, and Environment Canada, 2001; accessed November 2005; available from http://www.rsc.ca//index.php?lang_id=1&page_id=119.

knowledge creation."[547] It is not surprising that our conventional educational indicators reflect that perspective regardless of broader social consequences. Brown observes:

> The performance of almost all products, including cars (which today may need an occasional software tune-up), medical equipment, home appliances, industrial goods, is improving at breakneck speed—far faster than those products have traditionally evolved […]. Such changes are evident in every industry, creating a new imperative for organizations to see more clearly, make sense faster, and learn faster than their competitors.[548]

Henry Giroux criticizes this acceleration of "corporate time," which he maintains separates the economic dimension from the social, and fails to address human needs and social costs:

> The values of hierarchy, materialism, competition, and excessive individualism are enshrined under corporate time and play a defining role in how it allocates space, manages the production of particular forms of knowledge, and regulates pedagogical relations. Hence, it is not surprising that corporate time accentuates privatised and competitive modes of intellectual activity, largely removed from public obligations and social responsibilities. Divested of any viable democratic notion of the social, corporate time measures relationships, productivity, space, and knowledge according to the dictates of cost efficiency, profit, and a market-based rationality. Time, within this framework, is accelerated rather than slowed down […]. Under corporate time, speed controls and organises place, space, and communication as a matter of quantifiable calculation.[549]

Researchers have identified the effects of increasingly rapid change and acceleration on individuals and society in general as one of the most powerful problems and challenges confronting the global world.[550] Specifically, scientific and technological innovations have led to this speeding up of every aspect of modern life. Heylighen suggests:

> The most difficult problem of all may be the ever-accelerating speed of change in our present society. Scientific, technological, cultural and social innovations are taking place at such a breathtaking pace that no one can really keep up with them. People constantly need to revise their skills in order to adapt to the changing circumstances […] not everybody can cope as well with this need for constant re-education. As traditional agricultural and industrial jobs are disappearing, employees need to adapt to the intellectually much more demanding jobs of the

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[547] Brown. "Sustaining the Ecology of Knowledge." p. 1.

[548] Ibid. pp. 1–2.

[549] Giroux, Henry A. "Youth, Higher Education, and the Crisis of Public Time: Educated Hope and the Possibility of a Democratic Future," *Social Identities*, vol. 9, no. 2, 2003: 141-168. p. 150.

[550] Heylighen. *Complexity and Information Overload in Society: Why Increasing Efficiency Leads to Decreasing Control*, accessed.

information society. Many lack the necessary educational background. Even the intellectually most advanced groups, the researchers, educators, managers and technologists, often feel overwhelmed by the changes in their domain.[551]

Learning is affected in subtle ways by speed, and by the way information is digested and transformed into genuine knowledge and understanding. Friedrich Nietzsche argued that learning does not take hold when information is simply swallowed rapidly.[552] Instead, he linked true learning to contemplation, for which he used the metaphor of a cow chewing for long periods of time before swallowing and digesting. As Quince notes:

> We have become habituated to seeing rapid changes, instant results, immediate gratifications, quick fixes and speedy conclusions to our problems and dilemmas. Anything that develops slowly, subtly, that requires long, rapt, silent observation, frustrates the woefully limited patience of the modern mind.[553]

The rate and extent of change now confronting global society are unprecedented. As is often pointed out, the human population continues to grow at a rapid pace; the gap between rich and poor is expanding; and ecosystem degradation and climate change continue swiftly despite scientific warnings.[554] Increased speed is clear in travel and transportation, where, in 200 years, the maximum speed of movement has increased from the speed of walking or horse-drawn carriage of a few kilometers per hour, to automobiles reaching over 100 kilometers per hour, to aircraft moving at hundreds of kilometers per hour, and even space craft travelling at thousands of kilometers per hour.[555]

Information is growing exponentially and, according to many analysts, is creating a new basis for stress—information overload. One study, which we look at more closely later in the review, found that new information in 1999 equalled between two and three exabytes (one gigabyte equals 10^9 bytes and one exabyte equals 10^{18} bytes, or one billion gigabytes) and by 2002 had grown to approximately five exabytes, which represents an almost doubling of information in three years, or a growth of about 30% of newly stored information per year.[556] Five exabytes of information is equivalent to the amount of

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[551] Heylighen, and Berheim. *Global Progress II: Evolutionary Mechanisms and Their Side-Effects*, accessed. p. 43.

[552] Nietzsche, Friedrich. *Thus Spake Zarathustra*, New York: Dover Publications, 1887.Reprint, 1999.

[553] Quince, Peter. "Compost or Computers? Gardening Should Be as Important a Part of Education as English, Maths, and Science." *Resurgence*, January-February, 2000.

[554] Hodge, R. Anthony, Peter Hardi, and David V.J. Bell. *Seeing Change through the Lens of Sustainability*, Costa Rica, Workshop on "Beyond Delusion: Science and Policy Dialogue on Designing Effective Indicators of Sustainable Development," Costa Rica, May 6-9, The International Institute For Sustainable Development, 1999; accessed January 2006; available from http://www.iisd.org/pdf/background.pdf.

[555] Heylighen. *Complexity and Information Overload in Society: Why Increasing Efficiency Leads to Decreasing Control*, accessed.

[556] Lyman, Peter, Hal R. Varian, Peter Charles, Nathan Good, Laheem Lamar Jordan, and Joyojeet Pal. *How Much Information 2003?*, University of California, 2003; accessed November 2005; available from http://www.sims.berkeley.edu/research/projects/how-much-info-2003/.

information, if digitized, contained in half a million libraries the size of the U.S. Library of Congress print collection.

Television images are also moving faster. In 1978, "technical events," or jolts which speed shifts in perception, in regular television programming averaged ten events per minute and in commercials averaged twenty events per minute. By 1998 these events had more than doubled. MTV, which is mainly watched by youth, now has more than 60 events per minute.[557] This is significant, as knowledge development is determined not only by the content and quantity of information transmitted, as conventional indicators imply, but also by the *way* that knowledge is transmitted. There is no doubt that television is one of the primary vehicles and structures for knowledge transmission—very likely more potent than much of what is taught in schools. So these changes in television imagery—and their social impacts—are significant indicators of change in the field of education.

As a partial result of these changes in television imagery, observers have noted that children (and adults as well) increasingly have trouble sitting still except when in front of an electrical device that is moving faster than they are. Janet Currie and Mark Stabile note that children are then diagnosed with attention disorders and are prescribed drugs to slow them down.[558] According to Chris Higgins, et al., people are increasingly more depressed and anxious, in part due to this speed, and then take tranquilizers to slow down and dull the anxiety.[559]

It has been observed that change that happens too quickly increasingly puts strains on individuals and society that affect physical and mental wellbeing. Toffler, in 1970, studied physical and mental disturbances caused by accelerated change and suggested they would lead to a "future shock syndrome."[560] Researchers using a "Social Readjustment Rating Scale" have found a positive correlation between change and physical illness.[561] Heylighen stresses some of the current social outcomes of rapid change:

> The way change affects our physical state is evidently through its effects on our mental state. The instinctive reactions of an animal to stressful situations fall into

[557] Lasn, Kalle. *Culture Jam: How to Reverse America's Suicidal Consumer Binge - and Why We Must*, New York: HarperCollins, 1999. p. 16.

[558] Currie, Janet, and Mark Stabile. *Child Mental Health and Human Capital Accumulation: The Case of ADHD*, NBER Working Paper 10435, National Bureau of Economic Research, Inc., 2004; accessed December 2005; available from http://www.econ.ucla.edu/people/papers/currie/more/mental.pdf.

[559] Higgins, Chris, Linda Duxbury, and Karen Johnson. *Report Three: Exploring the Link between Work–Life Conflict and Demands on Canada's Health Care System*, Healthy Communities Division, Public Health Agency of Canada, 2004; accessed March 2005; available from http://www.phac-aspc.gc.ca/publicat/work-travail/report3/index.html.

[560] Toffler, Alvin. *Future Shock*, New York: Bantam Books, 1970.

[561] Heylighen, and Berheim. *Global Progress II: Evolutionary Mechanisms and Their Side-Effects*, accessed.

three main categories: fight, flight or fright. The corresponding human emotions seem to be aggression, fear or anxiety, and depression or despair. These basic attitudes can be recognized in current patterns of social behavior. Wanton aggression seems to underlie phenomena like vandalism and hooliganism. Helplessness and despair can be recognized in the increasingly common "burn-out" syndrome, and in the ever so frequent depressions. But perhaps the most common neurosis in present society is anxiety, as illustrated by the record use of anxiolytic drugs, and the many irrational fears and scares, where far-away threats trigger disproportionate reactions. On the socio-economic level, anxiety is apparent in the growing feeling of insecurity and in the public's growing distrust of different authorities and institutions, whether they be government, police, health providers, or church.[562]

Lore Arthur and Alan Tait have studied the prospects of lifelong learning in connection with work-life balance and time.[563] In the current time crisis experienced by most workers trying to balance time for work, family, and friends, workers are often required to commit additional hours to learning to increase employment-related skills. Arthur and Tait found that, although employers for the most part encourage lifelong learning and may pay for the training, they are not willing to surrender employee time in the workplace for this learning. Consequently, workers need to use their leisure time, which is now referred to in the business literature as "consumption time," for these pursuits. As a result, the authors argue, "The 'world of speed' places an added burden on learners who are already working excessively long hours in the place of work."[564]

Again, the reality described and documented by Arthur and Tait creates an important new perspective on conventional indicators of education—even those that are considered innovative by including lifelong learning. From a time use standpoint like that introduced by Arthur and Tait, employment-related learning opportunities might only be considered signs of progress if they do not contribute additional employee stress or are balanced against increments or decrements in employee leisure time.

The "fast school"

In schooling, Western culture has produced the "fast school," driven by tests, targets, and other standardized products, which, according to some analysts, now has more in common with "training" than with "education."[565] In an article titled "It's Time to Start the Slow School Movement," Emeritus Professor of Education Maurice Holt asserts:

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[562] Ibid., accessed. pp. 43–44.
[563] Arthur, Lore, and Alan Tait. "Too Little Time to Learn? Issues and Challenges for Those in Work," *Studies in the Education of Adults*, vol. 36, no. 2, 2004.
[564] Ibid. p. 9.
[565] Holt, Maurice. *The Nature and Purpose of Education*, Center for Ecoliteracy, 2004; accessed January 2006; available from http://www.ecoliteracy.org/publications/rsl/maurice-holt.html.

In today's school climate, […] the pressure to proceed from one targeted standard to another as fast as possible, to absorb and demonstrate specified knowledge with conveyor-belt precision, is an irresistible fact of school life […]. This curriculum straitjacket is the price exacted for believing that education is about assessed performance on specified content […]. If the purpose of schooling is to deliver the knowledge and skills that business needs, this approach cuts costs, standardizes resources, and reduces teacher training to a school-based process. Above all, the efficacy of the operation can be measured and the results used to control it and its functionaries—the teachers […]. But if schools exist to equip students with the capacity to address the unpredictable problems of adulthood and to establish themselves in a world of growing complexity, then crucial disadvantages emerge."[566]

Judith McGill also reflects on the current pace of schooling:

The most deleterious affect of this constant programming and objectification of children is the imposition of the hurried adult pace onto the life of the child. Childhood, by its very nature, is a much slower pace. Children are naturally not overly concerned about the constraints of time. They linger at play. At their very best they are oblivious to time and live in the moment. They are not specialists at multi-tasking. In fact they are able to move from one intense experience to the next with the same amount of focus on each moment—savouring the experience—no inclination to multi-task. Children, when given the freedom to immerse themselves in whatever fantasy they wish, are able to make time disappear. One moment it is nighttime and the next moment it is time for lunch. They are masters of time. Time is not a master of them. Children have their own inner sense of pacing that speaks to them in the quiet moments and is uniquely geared to their own developmental needs. They have an intuitive sense of when to take up the next challenge and if left alone they will do this all in their own time.[567]

Holt notes that beginning in the 2002–2003 school year, Japan's public schools began using a radically different curriculum that offers students much more free time. He quotes a senior official of the Japanese Ministry of Education, Ken Terawaki:

Our current system, just telling kids to study, study, study, has been a failure. Endless study worked in the past, when […] Japan was rebuilding […]. But that is no longer the case […] telling them to study more will no longer work […]. We want to give them some time to think.[568]

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[566] Holt, Maurice. "It's Time to Start the Slow School Movement," *Phi Delta Kappan: The Professional Journal for Education*, vol. 84, no. 4, 2002: 264-272. pp. 264–265, 267.

[567] McGill, Judith. *Reflecting on the Pace of Schooling*, Toronto Waldorf School, 2004; accessed January 2006; available from http://www.torontowaldorfschool.com/pdf/refpace.pdf. p. 2.

[568] Holt. "It's Time to Start the Slow School Movement." p. 270.

Slowing down

Worldwide, a general "slow movement" has been growing since the late 1980s in response to the increasing pace and speed of change and information flows described above. The slow food movement began in Italy as a response to fast food, and the "Slow Cities" movement grew out of that. In Italy alone, over sixty cities are committed to the tenets of the movement, which include: "cutting noise and traffic; increasing green spaces and pedestrian zones; backing local farmers and the shops, markets and restaurants that sell their produce; promoting technology that protects the environment; preserving local aesthetic and culinary traditions and fostering a spirit of hospitality and neighbourliness."[569] Carl Honore's recent book, *In Praise of Slow: How a Worldwide Movement is Challenging the Cult of Speed*, discusses these trends and the concepts of "fast" and "slow" as ways of being:

> Fast and slow are not just the rate of change in our lives—they are shorthand for ways of being. Slow does not mean dumb or dull. 'Slow is the opposite of fast. Where fast means busy, controlling, aggressive, hurried, analytical, stressed, superficial, impatient, active, and quantity over quality. Slow means calm, careful, receptive, still, intuitive, unhurried, patient, reflective, quality over quantity, making real and meaningful connections with people, culture, work, food, everything.[570]

In line with this view, Holt advocates that what we need now are "slow schools […] where students have time to discuss, argue, and reflect upon knowledge and ideas, and so come to understand themselves and the culture they will inherit."[571] He elaborates:

> The slow school is a place where understanding matters more than coverage; one takes time to see what Newton's concepts of mass and force might imply, to appreciate their abstract nature and the intellectual leap they represent. Then the usual algorithms fall into place quickly and securely. The slow school offers the intellectual space for scrutiny, argument, and resolution.[572]

Giroux considers that questions of time are crucial to how universities view and structure their public mission as "democratic public spheres," and he criticizes corporate time as covering over "the crisis of the social by dissociating all discussions about the goals of education from the realm of democracy."[573]

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[569] McGill. *Reflecting on the Pace of Schooling*, accessed.

[570] Honore, Carl. *In Praise of Slow: How a Worldwide Movement Is Challenging the Cult of Speed*, Toronto: Alfred A. Knopf Canada, 2004. p. 14, cited in McGill. *Reflecting on the Pace of Schooling*, accessed. p. 3.

[571] Holt. *The Nature and Purpose of Education*, accessed. p. 264.

[572] Holt. "It's Time to Start the Slow School Movement." p. 269.

[573] Giroux. "Youth, Higher Education, and the Crisis of Public Time: Educated Hope and the Possibility of a Democratic Future."

> Without question, the future of the university will largely rest on the outcome of the current struggle between the university as a public space with the capacity to slow time down in order to question what Jacques Derrida calls the powers that limit 'a democracy to come' and a corporate university culture wedded to a notion of accelerated time in which the principle of self-interest replaces politics and consumerism replaces a broader notion of social agency. A meaningful and inclusive democracy is indebted to a notion of public time, while neoliberalism celebrates what I call corporate time […].

> Public time rejects the fever-pitch appeals of 'just in time' or 'speed time,' demands often made within the context of 'ever faster technological transformation and exchange,' and buttressed by corporate capital's golden rule: 'time is money.' Public time slows time down, not as a simple refusal of technological change or a rejection of all calls for efficiency but as an attempt to create the institutional and ideological conditions that promote long-term analyses, historical reflection, and deliberations over what our collective actions might mean for shaping the future.[574]

Giroux suggests, in this context, that we need to ask "some very uncomfortable questions" about our values, vision for the future, and our responsibilities as citizens. Again it is noteworthy that conventional indicators of educational attainment make none of these vital qualitative distinctions that Giroux, Holt, and others regard as key to the future of education and to the social outcomes it is intended to produce.

Gregory Bateson notes that human beings need space and time to contemplate and "process" information, and to allow cognitive, intuitive and creative processes to enrich themselves and their societies.[575] Commentators stress the need to take time to experience the real world as distinct from the media, or mediated, world, and to reconnect to our roots in the earth and to our sense of wholeness and unity with life.[576]

Learning also takes time and repetition. Learning how to learn requires "education where the focus is not on static rules or facts, but on methods to autonomously analyze problems, find relevant information, synthesize the results, and thus develop new knowledge."[577] All the elements of this educational process take time and focused effort.

Mihaly Csikszentmihalyi, Director of the Quality of Life Research Center at Claremont Graduate University in California, considers that the most important outcome, and the guiding principle for a successful education, is to be happy now and in the future. He

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[574] Ibid. p. 148–149.
[575] Bateson, Gregory. *Man and Nature: A Necessary Unity*, New York: Dutton, 1979.
[576] Lasn. *Culture Jam: How to Reverse America's Suicidal Consumer Binge - and Why We Must*.
[577] Heylighen. *Complexity and Information Overload in Society: Why Increasing Efficiency Leads to Decreasing Control*, accessed. p. 22.

suggests that the most enjoyable and meaningful experiences that lead to personal growth and a lasting sense of happiness tend to come from activities that take time to accomplish, and require skill, concentration, mental discipline, and involvement. For example, "the arts, sports, music, a well-designed science experiment, the solution of an intriguing math problem, a good conversation, a job well done" all take time to master and to produce satisfaction.[578] Few conventional education indicators—including those concerned to relate learning outcomes to social outcomes—consider happiness as a key education outcome, as suggested by Csikszentmihalyi.

5.3.3 Anthropocentrism and ecocentrism

Anthropocentrism and ecocentrism represent two different value systems underlying attitudes towards the environment and nature, and, as such, have a direct influence on human interactions with the ecosystem and on issues of sustainability. Michael Bonnett of Homerton College, Cambridge, U.K. defines nature as "that sense of a self-originating material/ spiritual world of which we are a part, including the powers that sustain and govern it. Such a world is essentially *independent* of human will, but not *unaffected* by it."[579] Thus, Bonnett notes, any view of sustainability involves a frame of mind about nature.

Nordlund and Garvill define ecocentrism and anthropocentrism as follows:

> *[E]cocentrism* represents the belief that the ecosystem has an intrinsic value and this alone is reason to protect it, whereas *anthropocentrism* represents the belief that environmental protection is important because of nature's contribution to human welfare.[580]

The authors believe that ecocentric and anthropocentric values may both imply a positive attitude towards the environment but for different reasons. They cite research that finds people with primarily anthropocentric values are not inclined to pro-environmental behaviour if other human-centred values, such as material quality of life, interfere. However, individuals with more ecocentric values are inclined toward pro-environmental behaviour even if this requires a sacrifice of material quality of life.[581]

As Thompson and Barton suggest, those with anthropocentric values support protection of the environment because human health, quality of life, and comfort depend on the services provided by natural resources.[582] For example, air pollution can contribute to

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[578] Csikszentmihalyi. "Education for the Twenty-First Century." p. 113.

[579] Bonnett. "Education for Sustainability as a Frame of Mind." pp. 12–13.

[580] Nordlund, and Garvill. "Value Structures Behind Proenvironmental Behavior." p. 744.

[581] Ibid. p. 744.

[582] Thompson, Suzanne C. Gagnon, and Michelle A. Barton. "Ecocentric and Anthropocentric Attitudes toward the Environment," *Journal of Environmental Psychology*, vol. 14, 1994: 149-157.

breathing and health problems, depletion of fossil fuels can decrease standard of living, overfishing can threaten livelihoods and food sources, and destruction of the tropical rain forests can reduce the possibility of developing new medicines that contribute to human health. On the other hand, those with more ecocentric values support protection of the environment regardless of its services to human wellbeing, since the natural world has intrinsic value as part of the vast web of life, and because of the complex interconnections that form the ecosystem of the Earth, of which human wellbeing is a part. The ecocentric group "stresses a connectedness between humans and other aspects of nature (i.e. ecological settings and animals) that transcends the ability of natural resources to satisfy human material or physical wants."[583]

However, these two views often overlap considerably, especially when anthropocentric arguments are strategically used. For example, those with ecocentric values often use anthropocentric paradigms and arguments in order to communicate with mainstream economists, politicians, and the media. In those cases, anthropocentric evidence often functions as a bridge to point towards underlying ecocentric realities.

University of Guelph professor, John McMurtry, makes a distinction between the dominant paradigm of the capitalist "money-code-of-value," and the ecocentric view of the "life-code of values."[584] The latter is concerned with supporting and maintaining the diversity of life in all its forms and in recognizing the interdependence of all of life, including that of people, diverse cultures, and the multitude of species inhabiting the planet.

Anthropocentrism, as Bowers notes, is the view of the world that values humans as "the focus of all knowledge, creativity, and intelligence, [which] negates the importance of culture, tradition and ecology."[585] The current anthropocentric pattern of thinking about the natural environment "casts the environment as an economic resource or as a totally irrelevant factor when thinking about educational reform."[586] Anthropocentrism also includes the view that nature as a resource can be improved through technology and rational design—for example by increasing crop yields through biotechnology.

According to Lautensach, anthropocentrism represents the major conceptual and moral obstacle to implementing the goals of sustainability, and that this value needs to shift towards ecocentric ethics in order to generate the kinds of actions and policies that support genuine sustainability.[587] He suggests:

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[583] Ibid. p. 150.

[584] McMurtry, John. *Unequal Freedoms: The Global Market as an Ethical System*, Toronto: Garamond Press, 1998.

[585] Bowers. *Mindful Conservatism: Rethinking the Ideological and Educational Basis of an Ecological Sustainable Future*.

[586] Ibid. p. 156.

[587] Lautensach. *A Tertiary Curriculum for Sustainability*, accessed.

The shift towards ecocentric ethics will largely be concerned with value education and include a moral paradigm shift that extends beyond environmental values into how we conceptualise the moral position of humanity in the world. Among the moral concepts that have to be counteracted here are human-nature dualism and the ideals of freedom from nature and human dominion.[588]

Lautensach argues that desirable learning outcomes consist of beliefs and attitudes of the new ecological paradigm, which include "dependence on nature, integration within the natural environment, the recognition of natural limits to consumption and to technological development, concern for future generations and respect for nature."[589]

Bonnett notes that our relationship with nature is more than an attitude towards the environment, but represents an important aspect of our own identity. In other words, if we value ourselves, we will value what we believe supports us. Thus, the two are intimately interrelated. Bonnett recalls that "Heidegger was right in seeing that there is an important sense in which the idea of 'nature' that we hold defines our understanding of, and attitude towards, both the world and ourselves."[590] He quotes Freya Mathews, who illustrates a 'care ethic,' and places emphasis on the attitude of identification with all entities in the ecosystem:

> The thesis that we, as human selves, stand in a holistic relation—a relation of 'oneness'—with the cosmos itself, promises more than a list of ethical prescriptions. It promises a key to the perennial questions of who we are, why we are born, what is our reason for living, etc. In short it promises to throw light on the *meaning* of life.[591]

Many thinkers, such as John Ralston Saul, see the view of anthropocentrism as a disconnected worldview, which separates humans from the natural environment and, as such, creates a feeling of disconnection from a larger whole, and a deepening of underlying pain and suffering, as seen in the increase of anxiety, fear, and stress in society.[592] Richard Eckersley argues that negative trends in many indicators of the psychological wellbeing of youth such as higher rates of suicide, drug and alcohol abuse, depressive illness, eating disorders, crime, and feelings of discontent, disillusion, and disaffection reflect "a failure to provide a sense of meaning, belonging, and purpose in our lives, as well as a framework of values.[593] He observes:

> People need to have something to believe in and live for, to feel they are part of a community and a valued member of society, and to have a sense of spiritual

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[588] Ibid., accessed. p. 4.
[589] Ibid., accessed. p. 4.
[590] Bonnett. "Education for Sustainability as a Frame of Mind." p. 14.
[591] Mathews, Freya. *The Ecological Self*, London: Routledge, 1994. p. 147, cited in Bonnett. "Education for Sustainability as a Frame of Mind."
[592] Saul. "Good Governance as the Key to Gross National Happiness."
[593] Eckersley. "The West's Deepening Cultural Crisis."

fulfillment—that is, a sense of relatedness and connectedness to the world and the universe in which they exist […]. Other young people—the majority—may be coping and outwardly happy, but they often suggest a cynicism, hesitancy, and social passivity that reveal their uncertainty and confusion […]. Fundamentally, these are problems of culture, of beliefs, and of moral priorities, not of economics.[594]

Saul sees this disconnection as fundamentally a problem of knowledge. For example, he suggests that exclusive approaches in the West sever the "idea of civilization from the idea of the inclusive whole [and] prevent us from understanding the context in which we are working." Saul holds that the source of inclusive approaches and the key to reconnecting the two approaches is the experience of animism, or the "idea of the world, of the planet, of the Earth, as a seamless web." This is what Maurice Berman calls the "participating consciousness."[595] Saul continues:

[T]he severing of the role of animism in the West, at the end of the Middle Ages, had certain advantages, but had certain terrible disadvantages […]. Severing us, in effect, from the idea of the Earth as a seamless whole is really what you're struggling with. It's what makes us think that human beings have rights, somehow, to change and alter the nature of the Earth, and to take non-precautionary risks—to take those kinds of risks with things we don't actually know about, even though they may be dangerous. That's the sign that we're out of control because we're no longer linked to the Earth, because we have cut off the animistic from our ethical, moral, religious, intellectual way of life.[596]

The environmental movement has brought a new awareness of the interconnectedness of all life, and the beginnings of a shift in consciousness that values co-operation above competition. According to the Dalai Lama, the imperative to respect all sentient beings is reflected in the idea of interdependence, which he describes as "the fundamental law of nature where all forms of life regardless of religion, law, or education survive by mutual co-operation based on their interconnectedness."[597]

From the perspective of learning behaviour and how it takes place, it is interesting that John D. Rockefeller, Sr. and the Dalai Lama have such different views of what constitutes a fundamental "law of nature." Rockefeller's dictum, cited above, is that: "The growth of a large business is merely a survival of the fittest […]. It is merely the working out of a law of nature and a law of God."[598] It is arguable that a worldview can so permeate conventional learning structures that the structures themselves simply reflect

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[594] Ibid.

[595] Berman, Morris. *The Reenchantment of the World*, Ithaca, N.Y.: Cornell University Press, 1981.

[596] Saul. "Good Governance as the Key to Gross National Happiness." p. 16.

[597] Gyatso, Tenzin, the 14th Dali Lama. *Compassion and the Individual*, Somerville, MA: Wisdom Publications, 1992. p. 5.

[598] Rockefeller, John D. cited in Hayward. *Perceiving Ordinary Magic: Science & Intuitive Wisdom*. p. 99.

prior tacit learning, without regard to the evidence that is traditionally regarded as the basis of learning and education.

From an education perspective, it is important first to acknowledge that such views are not inevitable, but are learned,[599] and secondly to subject statements about laws of nature and of human interaction with the environment to empirical testing and to the available scientific evidence. The evidence examined in this literature review strongly suggests that the ecocentric view is more in accord with empirical, scientific, and historical reality than the anthropocentric view. If the latter is currently dominant, this can be ascribed at least in part to failures in existing educational systems and learning processes.

In order then to assess the quality of an educational system and the degree to which a populace is genuinely educated, a rigorous content analysis of educational texts and of expressed public statements and values is necessary in order to assess the extent to which particular Western worldviews pervade the educational and public discourse.

5.4 Measuring values

Michael Hechter, writing for the *Annual Review of Sociology*, insists the methodology generally used to measure values is "unimpressive" and calls for the development of better instruments to measure them.[600] In particular, he is concerned that a person's response to survey questions about values often fails to predict subsequent behaviour. Steven Hitlin and Jayne Piliavin recently reviewed the conceptualization and use of values in the sociology literature, and found little coherence in both the understanding and measurement of values. [601]

Value measurements taken from empirical social research use both ranking and rating procedures. Two popular survey instruments in use include the Rokeach Value Survey, which uses ranking, and the Schwartz Value Survey (SVS), which uses rating procedures.[602] On the rating scale, respondents are given a list of values and asked to rate them on a Likert-type scale ranging from whether the value is not important to whether it is highly important. The problem here is that respondents can identify all the values as "highly important" or vice versa. Ranking gives the respondent a list of values and asks the respondent to rank them in order of importance to the person.

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[599] McMurtry. "The Iconoclast: Dumbing Down with Globalization: The Ideology of Inevitable Revolution."
[600] Hechter. "Agenda for Sociology at the Start of the Twenty-First Century."
[601] Hitlin, and Piliavin. "Values: Reviving a Dormant Concept."
[602] Klein, Markus, Hermann Dulmer, Dieter Ohr, Markus Quandt, and Ulrich Rosar. "Response Sets in the Measurement of Values: A Comparison of Rating and Ranking Procedures," *International Journal of Public Opinion Research*, vol. 16, no. 4, 2001: 474-483.

Markus Klein, et al. remark that the ranking scale is more accepted in the literature, while Hitlin and Piliavin believe that rating is used more often.[603] Some researchers argue that ranking forces the respondent to give more reasoned answers. Klein, et al. found "no serious attempts" to test this assumption. Their test found that the ranking method offered no particular benefits over the rating method in terms of response sets.[604] Schwartz prefers rating over ranking since it has more statistical properties, allows for longer lists of values than ranking, which may prove difficult and taxing for respondents, and is better at capturing how choice of values enters into action since people do not always rank values in their actions.[605]

Shalom H. Schwartz, et al. have recently developed a new instrument, the Personal Values Questionnaire (PVQ), which requires less abstract thinking, is more context oriented, and is more accessible to multicultural populations than the original Schwartz Value Survey (SVS).[606] The survey uses the original 10 core values of the SVS, which are each defined in terms of motivations and goals, and which were recognized in approximately 70 countries. The PVQ consists of 56 individual values, which are rated in importance by each respondent, who circle a number on a Likert scale of 1 to 7 that best describes the importance of each value as a guiding principle in the respondent's life. Related values are combined in one of the ten value types listed in Table 6. The ten value types are clustered along two axes: conservation through to openness to change, and self-enhancement through to self-transcendence. The researchers describe the basic questionnaire:

> The PVQ used here includes short verbal portraits of 29 different people [see examples in Table 6]. Each one describes a person's goals, aspirations, or wishes that point implicitly to the importance of a value. For example, 'Thinking up new ideas and being creative is important to him. He likes to do things in his own original way' describes a person for whom self-direction values are important. 'It is important to him to be rich. He wants to have a lot of money and expensive things' describes a person who cherishes power values. For each portrait, respondents answer, 'How much like you is this person?' They check one of six boxes labeled: very much like me, like me, somewhat like me, a little like me, not like me, and not like me at all. We infer respondents' values from their self-reported similarity to people described implicitly in terms of particular values. [607]

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[603] Hitlin, and Piliavin. "Values: Reviving a Dormant Concept."
, Klein, Dulmer, Ohr, Quandt, and Rosar. "Response Sets in the Measurement of Values: A Comparison of Rating and Ranking Procedures."
[604] Klein, Dulmer, Ohr, Quandt, and Rosar. "Response Sets in the Measurement of Values: A Comparison of Rating and Ranking Procedures."
[605] Schwartz, Shalom H. "Are There Universal Aspects in the Structure and Content of Human Values?," *Journal of Social Issues*, vol. 50, 1994: 19-45.
[606] Schwartz, Shalom H., Gila Melech, Arielle Lehmann, Steven Burgess, Mari Harris, and Vicki Owens. "Extending the Cross-Cultural Validity of the Theory of Basic Human Values with a Different Method of Measurement," *Journal of Cross-Cultural Psychology*, vol. 32, no. 5, 2001: 519-542.
[607] Ibid.

Table 6. Definitions of ten value constructs in terms of their goals, and examples of Personal Values Questionnaire (PVQ) items that represent them (male version)

Power: Social status and prestige, control or dominance over people and resources. (He likes to be in charge and tell others what to do. He wants people to do what he says.) (Social Power, Authority, Wealth)

Achievement: Personal success through demonstrating competence according to social standards. (Being very successful is important to him. He likes to stand out and to impress other people.) (Successful, Capable, Ambitious, Influential)

Hedonism: Pleasure and sensuous gratification for oneself. (He really wants to enjoy life. Having a good time is very important to him.) (Pleasure, Enjoying Life)

Stimulation: Excitement, novelty, and challenge in life. (He looks for adventures and likes to take risks. He wants to have an exciting life.) (Daring, A Varied Life, and Exciting Life)

Self-direction: Independent thought and action-choosing, creating, exploring. (He thinks it's important to be interested in things. He is curious and tries to understand everything.) (Creativity, Freedom, Independent, Curious, Choosing Own Goals)

Universalism: Understanding, appreciation, tolerance and protection for the welfare of all people and for nature. (He thinks it is important that every person in the world should be treated equally. He wants justice for everybody, even for people he doesn't know.) (Broadminded, Wisdom, Social Justice, Equality, A World at Peace, A World of Beauty, Unity with Nature, Protecting the Environment)

Benevolence: Preservation and enhancement of the welfare of people with whom one is in frequent personal contact. (He always wants to help the people who are close to him. It's very important to him to care for the people he knows and likes.) (Helpful, Honest, Forgiving, Loyal, Responsible)

Tradition: Respect, commitment and acceptance of the customs and ideas that traditional culture or religion provide the self. (He thinks it is important to do things the way he learned from his family. He wants to follow their customs and traditions.) (Humble, Accepting My Part in Life, Devout, Respect for Tradition, Moderate)

Conformity: Restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms. (He believes that people should do what they're told. He thinks people should follow rules at all times, even when no one is watching.) (Politeness, Obedient, Self-Discipline, Honoring Parents and Elders)

Security: Safety, harmony and stability of society, of relationships, and of self. (The safety of his country is very important to him. He wants his country to be safe from its enemies.) (Family Security, National Security, Social Order, Clean, Reciprocation of Favors)

Note: Female version was not given.

Source: Schwartz, Shalom H., Gila Melech, Arielle Lehmann, Steven Burgess, Mari Harris, and Vicki Owens. "Extending the Cross-Cultural Validity of the Theory of Basic Human Values with a Different Method of Measurement." *Journal of Cross-Cultural Psychology*, 32, no. 5 (2001): 519–42.

The World Values Survey, which now tracks values in 80 countries, was conducted in Canada in 1981, 1990, and 2000. Ronald Inglehart, one of its developers, believes that it is important to "tap deeply seated values, and beliefs, rather than opinions that fluctuate from day to day."[608] Inglehart sums up the need for value surveys:

> Societies are driven by patterns of mass behavior. This behavior is rooted in people's prevailing psychological orientations, including their beliefs, values and motivations. Hence, in order to understand how societies function and develop, one needs to understand how their traditions, institutions and regulations are anchored in their people's beliefs, values and motivations. Survey research makes this possible.[609]

Inglehart has found a pattern of changes in values among advanced industrial societies since 1990.[610] Generally, he argues, values change slowly as one generation replaces another. Surveys find the majority of the oldest age groups to be materialists—those who give economic and physical security the most weight. Younger groups appear to be more oriented to modern values—those that give priority to belonging, self-expression, and environmental protection. After following the groups for almost 25 years, the younger group does not appear to be becoming more materialistic as it ages. This interpretation has its critics.[611] However, if accurate, it could have profound implications for the evolution of social, political, and economic systems in the country. We look more closely at the World Values Survey in the final indicator report.

Executive Editor of *Yes! A Journal of Positive Futures,* Sarah van Gelder, reports that there are indications that a growing number of people are changing their values to become more co-operative and community-oriented, although these trends are "below the radar of the modernist media."[612] She suggests looking for indicators in the trends, values, institutions, and ways of life that are drawing people: "Where is there new energy and new creativity? What are people actually doing outside the realm of modernism and fundamentalism? These activities may not yet seem significant […]. They are nonetheless potent indicators of a possible future."[613]

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[608] Inglehart, Ronald, and Christian Welzel. "What Insights Can Multi-Country Surveys Provide About People and Societies." *Comparative Politics Newsletter*, American Political Science Association, Summer, 2004, 1-11.

[609] Ibid.

[610] Inglehart, Ronald. "Globalization and Postmodern Values," *The Washington Quarterly*, vol. 23, no. 1, 2000: 215-228.

[611] Davis, Darren W., and Christian Davenport. "Assessing the Validity of the Postmaterialism Index," *The American Political Science Review*, vol. 93, no. 3, 1999: 649-664.

[612] van Gelder. "Self and the Cultural Creatives."

[613] Ibid. p. 825.

Paul Ray is one researcher looking into indicators of these changing values in the United States, which he believes reflect concerns of over 40 years of social and consciousness movements.[614] Ray's quantitative data, which he is in the process of updating, comes from the 1995 Integral Culture Survey of 1,036 U.S. adults and the January 1999 Sustainability Survey of 2,181 adults sponsored by the U.S. Environmental Protection Agency and the President's Council on Sustainable Development.[615] The first survey was a battery of 70 questions of value statements designed to elicit what was most important in people's lives. People were classified into subcultures by combining responses into 15 value measures. The survey data were analyzed using factor analysis and multidimensional scaling, and were validated using statistical modeling. Ray also used focus groups and 13 years of proprietary consumer surveys and public opinion polls from American LIVES, Inc. for qualitative information.

Ray identified an emerging group of loosely connected people who are neither associated with the Right, nor with the Left, nor with any political affiliation. Ray calls this subculture "Cultural Creatives" and the "New Progressives," and notes that it includes approximately 36% of the U.S. population and consists of 60% women. Approximately 30% of the Cultural Creatives have completed university and 32% have a high school degree or less.[616] The Cultural Creatives are concentrated in the middle class income range of $25,000-$75,000, but the group is very diverse in terms of age, income, education, and occupation. This group tends "to oppose corporate globalization and big business interests, and favor ecological sustainability, women's issues, consciousness issues, national health care, national education, and an emerging concern for the planet and the future of our children and grandchildren on it. Many of their issues are claimed by the Left, and sworn at by the Right, but their stance departs from both liberal Left and religious Right."[617]

Ray's Political Compass shows four groups at "right angles" to each other, defined both geographically and by their worldviews and social affiliations: the Liberal Left in the West (Modernists) (12% of population) vs. the Social Conservative Right (Traditionalists) (19% of the population) in the east, crossed by the New Progressives or Cultural Creatives in the north (36% of the population) vs. the Big Business Conservatives in the south (14% of the population). In the center is an apolitical group with no particular opinions or leanings (20% of the population).

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[614] Ray, Paul H., and Sherry Ruth Anderson. *The Cultural Creatives*, New York: Harmony Books, 2000.
[615] Cultural Creatives. *The Straight Facts*, 2005; accessed December 2005; available from http://www.culturalcreatives.org/straightfacts.html.
[616] There was no mention in this source of the remaining 38% of the population and what their educational levels would be. It is assumed here that this 38% has undertaken some form of post-secondary training but not completed university.
[617] Ray, Paul. "The New Political Compass." *Yes! Magazine: Art and Community issue*, 2002, accessed December 2005; available from http://www.yesmagazine.com/article.asp?ID=874. p. 1.

Rays's surveys and focus groups indicate that the Cultural Creatives are the most altruistic in the population with 58% of Cultural Creatives considered altruistic, compared with Modernists (or the Liberal Left) (32% of the Modernists being altruistic), and with Traditionalists (or Social Conservatives) (55% of Traditionalists considered altruistic).[618] Table 7 illustrates the altruism indicators and the percentages of Cultural Creatives and others who answered that the issue asked about was important to their lives.

Table 7. Questionnaire items concerning altruism: percent of group responding that the issue raised is important

Questionnaire items concerning altruism: *how important to your life is:*	Non-Cultural Creative groups	Cultural Creative group
The caring quality of your relationship	70%	95%
Helping other people	72%	93%
Finding your purpose in life, rather than making money	41%	77%
Having your work make a contribution to society	51%	75%
Involvement in volunteer work	23%	45%

Source: Cultural Creatives. *The Straight Facts*, 2005; accessed December 2005; available from http://www.culturalcreatives.org/straightfacts.html.

Van Gelder, whose own research looks into positive futures, observes that there is an enormous creativity among Cultural Creatives in any sector her colleagues review. She presents a list of the type of activities in which the Cultural Creatives sector is involved:

> Cultural Creatives are building stronger communities, supporting local farmers, and working to preserve ecosystems and endangered species. Many are thinking carefully about their own values—considering what is of importance to them, their children and the broader community, not what the advertisements say is important. They are thinking carefully about what they buy, how much they need, and what they do for a living, taking into account their own life goals and the needs of the larger whole. Some are creating socially responsible businesses, investing their money with socially and environmentally responsible businesses, giving away money to organisations that are making a difference. Some are starting or supporting new types of economic structures—community-supported agriculture, food co-operatives, land trusts, alternative currencies. Some are starting or supporting non-profit organisations, working on saving rain forests, feeding the hungry, supporting human rights. There are literally thousands of

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[618] The business conservative group was not distinguished in the reporting on this measure in this particular source. Cultural Creatives. *The Straight Facts*, accessed..

these non-profits popping up around the world, an unprecedented rise in citizen empowerment.[619]

Considering that this sector is estimated to comprise 36% of the U.S. population, according to Ray's analysis of survey results, the sector's existence appears to constitute a highly significant change in societal values based on tacit learning tools and structures that may have little to do with formal education. Van Gelder considers:

> [a future that] may be based far less on the tenuous connection to career and far more on multiple dimensions of human relationships, creativity, altruism, spiritual and personal growth, and ecological literacy […]. [In the future,] people might earn the esteem of their peers by what they contribute more than by what they own.[620]

5.5 Canadian values

Although Canadian and U.S. values both reflect the basic Western mind-set, some of their fundamental values are different. For example, in general, Canadians have more social and less individualistic values than the U.S. This can be seen in comparisons between the health care systems in the two countries. The Canadian system is universal and offers health care to all its citizens at no charge, while the U.S. system depends on individual payment and is not inclusive. There are many other differences as well, such as views of multiculturalism—Canada's view respects diversity and multiculutralism, and encourages immigrants to continue to propagate their own culture; while in the U.S., immigrants are encouraged to become part of the "melting pot," and become "Americans," which generally means leaving their previous culture behind and adapting American ways. A discussion specifically concerned with Canadian values is included here to illustrate the fact that, although we have discussed "Western values," there are differences between systems in the West.

In discussing how Canadian values are expressed in Canada's formal foreign policy priorities, John Kirton from the University of Toronto identifies seven core, enduring Canadian values, which he also refers to as "convictions." *Environmentalism*, he declares, is "an enduring conviction on the part of virtually all Canadians that global environmental protection should be the first priority in Canadian foreign policy."[621] The other values Kirton discusses are: *globalism*—the conviction the Canada is an integral part of the world community; *multiculturalism*—respect for diversity and the rights of minorities; *openness* to the outside world—in terms of, for instance, ideas, ecological flows, and

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[619] van Gelder. "Self and the Cultural Creatives." p. 826.
[620] Ibid. pp. 823, 825.
[621] Kirton, John. *G8 Online: Canada and Its Values: Policy Priorities and Practice*, Toronto, University of Toronto, 2002; accessed January 2005; available from http://www.g8online.org.

education; *anti-militarism; egalitarianism*—the need to maintain a strong social net; and *international institutionalism*—connection to the world through membership in international institutions.

Canadian governments and educators have also stressed moral or value education in curriculum goals. For example, *The Atlantic Canada Framework for Essential Graduation Learnings in Schools,* which was produced following public consultations, describes skills and attitudes that all students are expected to demonstrate prior to graduation.[622] In this framework, attitudes related to values include the abilities:

- to understand sustainable development and its implications for the environment
- to examine human rights issues and recognize forms of discrimination
- to determine principles and actions of just, pluralistic and democratic societies
- to reflect critically on ethical issues
- to understand their own and others' cultural heritage, cultural identity, and the contribution of multiculturalism to society.

The key question is whether current educational institutions and curricula fulfill these stated goals. Currently, there are no indicators of student attitudes related to values. Teachers assess these attitudes indirectly within classrooms using a variety of assessment strategies including portfolios, performances, essays, and projects, but results are not available to the public. Unfortunately, few conventional indicators of educational attainment even ask this question, or attempt to relate what they report to such fundamental statements of educational purpose, shared values, and desired societal outcomes. For the most part, these conventional indicators simply focus on quantitative measures such as numbers of graduates, high school dropouts, participation and graduation rates, and overall spending on education. Qualitative measures, such as assessments of the capacity and success of educational systems to reflect specified values and achieved desired stated societal outcomes, are usually absent.

5.5.1 Canadian Policy Research Networks value research

"Exploring Canadian Values"—Suzanne Peters report

In 1995, the late Suzanne Peters, at the time director of the Family Network of the Canadian Policy Research Networks (CPRN), published a "pathbreaking" report that explored the values Canadians hold with respect to the three major areas of the social safety net—education, health, and social welfare.[623] Peters notes in the report that

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[622] Atlantic Provinces Education Foundation (APEF). *The Atlantic Canada Framework for Essential Graduation Learnings in Schools*, accessed.
[623] Peters, Suzanne. *Exploring Canadian Values: A Synthesis Report*, Ottawa, Canadian Policy Research Networks (CPRN), 1995; accessed December 2004; available from http://www.cprn.org/en/doc-download.cfm?id=149&pdf=19235_en.pdf.

reflecting on values and defining principles are crucial steps in building the social contract that have been missing from the process of social policy reform.[624] She explores this notion further:

> The reform of Canada's social policy has not been informed by an understanding of values […]. [Canadians] are willing to rediscover the basic foundations of their well-being. Most reform efforts have focused on mechanical program options rather than drawing on underlying principles. The effort to define the social contract has, therefore, been too narrow. It has not taken into account the broader trade-offs of economic and personal well-being for individuals and for society at large.[625]

For the report, Peters combined data from public opinion polls and focus groups. She used data from 15 years collected from 18 databases and approximately 50 different polls from 1980 to 1995. The polls came from major polling organizations in Canada: Angus Reid Group, Inc., Decima Research, Ekos Research Associates, Gallup Canada, Goldfarb Consultants, Insight Canada, the Institute for Social Research, and Price Waterhouse. Peters maintains that:

> While public opinion data is often criticized as superficial, it offers the only continuing record of the values and commitments that Canadians have espoused in changing social, economic, and political times […]. Comparisons of polling data over the years have limits, however, including the fact that they must be considered as a time-series rather than longitudinal data. Also, since even very similar questions asked in different polls may elicit different answers—both because of the sequence of the questions and the context of related questions— polls do not tell a precise story. The most reliable date here is based on the answers to identical questions asked in repeated polls. Overall, the data give a broad-brush picture of Canadian values and demonstrate that, through changing times and shifting government priorities, Canadians' values in social policy are remarkably stable.[626]

Peters also conducted twenty-five focus groups designed to "simulate a process of public judgment," which allows participants time to contemplate and discuss issues in some depth. She found that the core values, "ideas that people value greatly," that Canadians "cherish," are grouped around themes such as self-reliance, compassion, democracy, freedom, fairness, and equality.[627]

Basically, Peters found very little change in the core values of Canadians over the 15-year period, although doubts about whether these values are expressed in public policy did

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[624] Ibid., accessed. p. 66.
[625] Ibid., accessed. p. 66.
[626] Ibid., accessed. p. 2.
[627] Ibid., accessed.

increase. On the other hand, concern for specific policy issues, which reflect values, were liable to show considerable change over time. For example, in 1988 70% of the population was concerned about free trade, but in 1995 only 1% of the population said that free trade was an issue of concern. Furthermore, Peters found that Canadians are deeply concerned about social programs and want policies for social programs based on these core values: "Canadians […] want to do more than merely allay individual symptoms through fragmented approaches; they want to promote our collective well-being and find a cure for Canada's social and economic ills."[628]

Canadians also consider education as a means of "offering citizens equal opportunity" and as "investment in children as the future generation" to be a high priority.[629] Peters notes:

> Adequacy in education means primary and secondary education for all Canadians, and post-secondary education for qualified Canadians. Canadians have different expectations and aspirations and will tolerate different outcomes as long as no one with real ability is denied access to opportunity. Canadians see education as an extremely valuable personal and social asset.[630]

Table 8 below indicates public priorities from 1988–1995. Peters collected the data from the National Angus Reid polls, "National Standards for Social Programs."

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[628] Peters. *Exploring Canadian Values: Foundations for Well-Being.* p. 6.
[629] Peters. *Exploring Canadian Values: A Synthesis Report*, accessed. p. 18.
[630] Peters. *Exploring Canadian Values: Foundations for Well-Being.* p. 72.

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Table 8. Percentage of Canadians that feel specific public policy is a priority, 1988–1995

Issues	Percentage of respondents										
	Nov 1988	Nov 1989	Nov 1990	Nov 1991	Nov 1992	Nov 1993	Dec 1994	Feb 1995	Mar 1995	May 1995	June 1995	July 1995
Unemployment/ jobs	11	8	9	27	37	58	28	29	28	31	35	34
Deficit/debt	5	10	10	10	12	33	20	48	35	25	28	28
National unity/Quebec	-	-	13	26	6	4	33	35	25	21	24	22
The economy (general)	6	9	29	42	63	21	21	20	21	20	18	22
Healthcare/ social services*	9	5	3	4	7	14	10	13	18	20	19	19
Health care	n/a	n/a	n/a	n/a	n/a	9	5	7	11	14	12	12
Poverty	2	5	3	5	5	3	7	5	6	7	8	8
Taxes	6	31	35	11	3	5	6	13	6	7	5	5
Social services	n/a	n/a	n/a	n/a	n/a	5	5	6	7	6	7	7
Crime/justice	1	3	1	2	2	2	8	7	6	6	9	11
Gun control	-	-	-	-	-	-	1	2	1	6	3	1
Education	9	3	1	2	6	5	5	6	7	6	5	3
Immigration	1	2	2	2	2	3	4	4	3	4	4	3
Environment	10	24	14	8	7	5	2	3	4	3	5	4
International issues	0	3	13	1	1	1	1	0	1	3	4	1
Defence/peace	2	2	1	1	1	1	1	1	1	2	1	2
Government/ politics	2	4	7	4	5	3	1	2	3	2	2	3
Free trade/trade	70	9	4	5	4	16	1	2	2	2	2	1
Fishing	-	-	-	-	-	-	-	-	7	1	1	2
Other economic issues	2	3	2	1	3	1	1	1	1	1	2	1
Native issues	2	2	8	3	3	1	2	1	1	1	2	3
Moral issues	-	-	-	1	1	1	1	0	1	1	1	1
Abortion	9	16	2	1	0	0	1	0	0	0	0	1
Constitution	1	23	9	22	8	2	0	0	0	0	0	0
Language issues	1	4	5	3	2	1	0	0	0	0	0	0
Racism	-	-	-	1	1	1	0	0	0	0	0	0
Other	17	17	6	4	5	6	6	5	13	7	7	5

Note: The question asked was: Thinking of the issues presently confronting Canada, I'd like to know which one you feel requires the greatest attention from the country's leaders.
These two items were presented together in previous soundings. Above, mentions for each are reported separtely for Nov. 1993 onwards. "Other" includes policy issues mentioned by less than 1% of all respondents. Up to 3 mentions were accepted.

Source: Angus Reid Group, Inc., The National Angus Reid Poll, "*National Standards for Social Programs,*" cited in Peters, Suzanne. *Exploring Canadian Values: Foundations for Well-Being*. Ottawa: CPRN Study No. F-01, Canadian Policy Research Networks, 1995. p. 96.

It is interesting to note that, in Table 8, in 1988, 6% of the respondents were concerned with the general economy, while in 1995, this figure had risen to 22% of the respondents being concerned about the economy. On the other hand, in 1988, 9% were concerned about education and 10% were concerned about the environment. By 1995, these percentages had been reduced to 3% and 4% respectively. Since the poll asked which of the issues the respondents felt required attention from the country's leaders, it is unclear whether the public values had changed, or whether how it felt the government was doing had changed. In other words, if the public valued education, but thought that the government was doing a good job on educational issues, this might explain the decrease in the percentage of respondents concerned with education in 1995. Attempts to update the table using the same data source, the National Angus Reid—now Ipsos-Reid—polls were unsuccessful, since this information is generally used by business and costs more than $10,000 to access.

Canada's social contract

Writing for the Canadian Policy Research Networks (CPRN), Matthew Mendelsohn of Queen's University reviewed public opinion surveys from 1980 through 2002 to explore "how Canadians are reconciling pressures for competitiveness, innovation, efficiency, and globalization, with the traditional view of a sharing and caring Canadian identity."[631] Mendelsohn notes that Canada has traditionally been more collectivist, less individualistic, and less materialistic than the United States. He questions recent generalizations that Canadians are accepting more individualistic market-based values and rejecting collectivist values.

Data from 2002 show that Canadians still hold more collectivist than individualist values, see no contradiction between competitiveness and productivity on the one hand and a strong network of social programs on the other, and think that social programs increase productivity, as shown in Figure 8 below.

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[631] Mendelsohn, Matthew. *Canada's Social Contract: Evidence from Public Opinion*, Canadian Policy Research Networks, Discussion Paper No. P|01, 2002; accessed May 2006; available from http://www.cprn.com/en/doc.cfm?doc=36. p. v.

Figure 8. Percentage of Canadians who believe social programs do or do not improve productivity, 2002
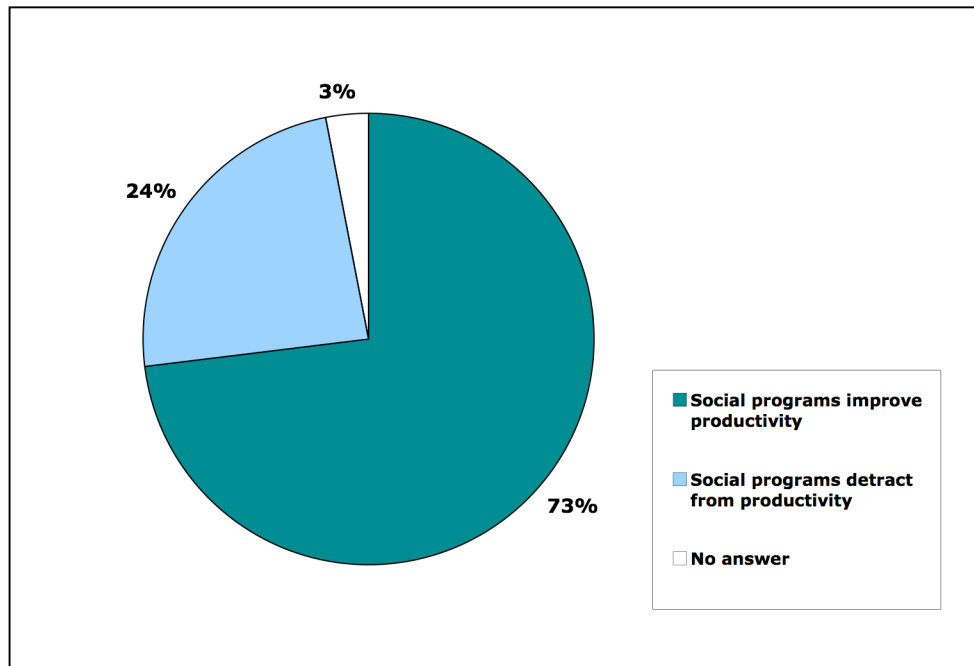
Note: Question asked was: Which of the following statements is closest to your point of view?
   a.   Social programs detract from Canada's productivity because they cost so much and keep taxes higher.
   b.   Social programs are important human investments which increase Canada's productivity by ensuring a healthy, secure population.

Source: Mendelsohn, Matthew. *Canada's Social Contract: Evidence from Public Opinion*. Canadian Policy Research Networks, Discussion Paper No. P|01, 2002, citing EKOS: Canadian Attitudes towards Productivity; 2002.

Figure 9 below shows that in 2001, Canadians placed a higher value on social programs than on "having a government that interferes as little as possible with the free market." Mendelsohn elaborates: "Although the Canadian elite may have embraced a model of citizenship focused on the individual and the market, the Canadian public remained largely unmoved,"[632] and the support that the Canadian public shows for trade liberalization "is a manifestation of internationalism, not a manifestation of support for neo-conservative values."[633]

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[632] Ibid., accessed. p. 19.
[633] Ibid., accessed., p. 18.

Figure 9. Percentage of Canadians that prioritise either the free market or more social programs, by region, 2001
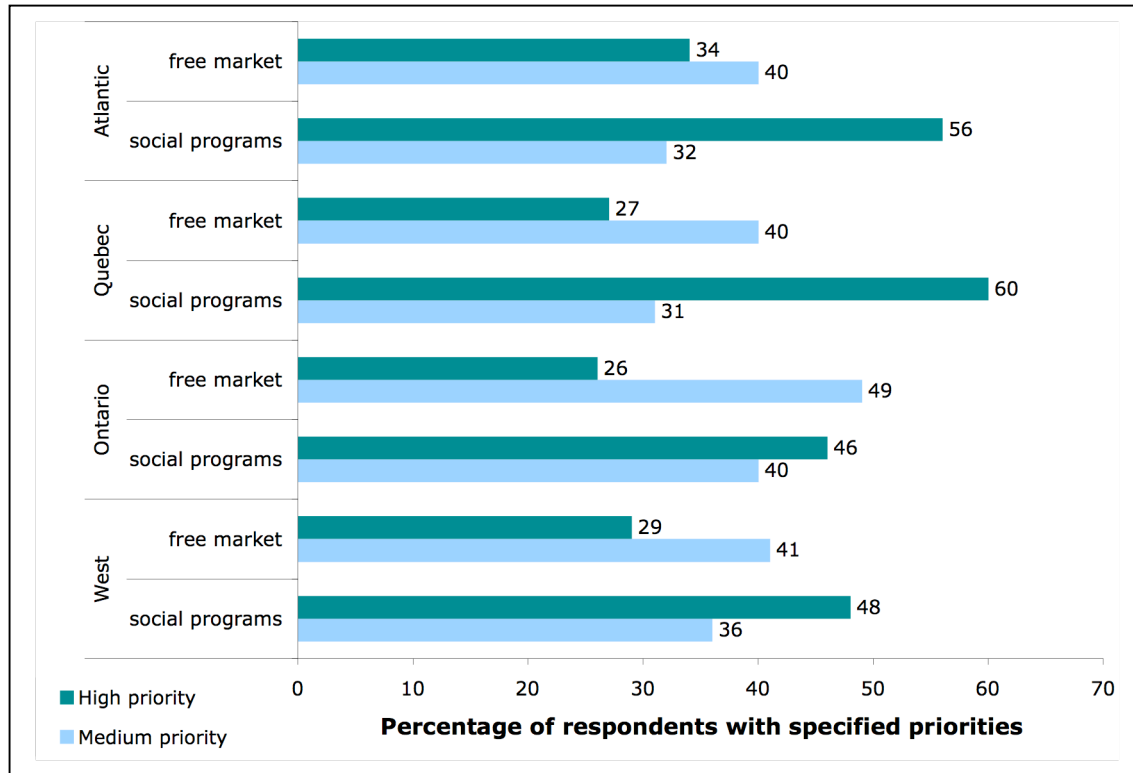
Note: Question asked was: For each of the following items, could you tell me whether you think it should be a high priority for Canada, a medium priority, a low priority, or should it not be a priority at all?
  a.   Having a government that interferes as little as possible with the free market.
  b.   Having a more generous system of social programs.

Source: Mendelsohn, Matthew. *Canada's Social Contract: Evidence from Public Opinion*. Canadian Policy Research Networks, Discussion Paper No. P|01, 2002, citing CROP/CRIC, Trade Survey 2001.

Figure 10 below indicates Canadians felt more strongly in 1999 than they did in 1981 that the government should put more effort into areas such as the environment, health care, education, and poverty. Support for putting more effort into the environment was high in both years, while support for health and education grew in 1999.

Figure 10.Percentage of Canadians ranking different government expenditures as needing more or less effort, 1981 and 1999
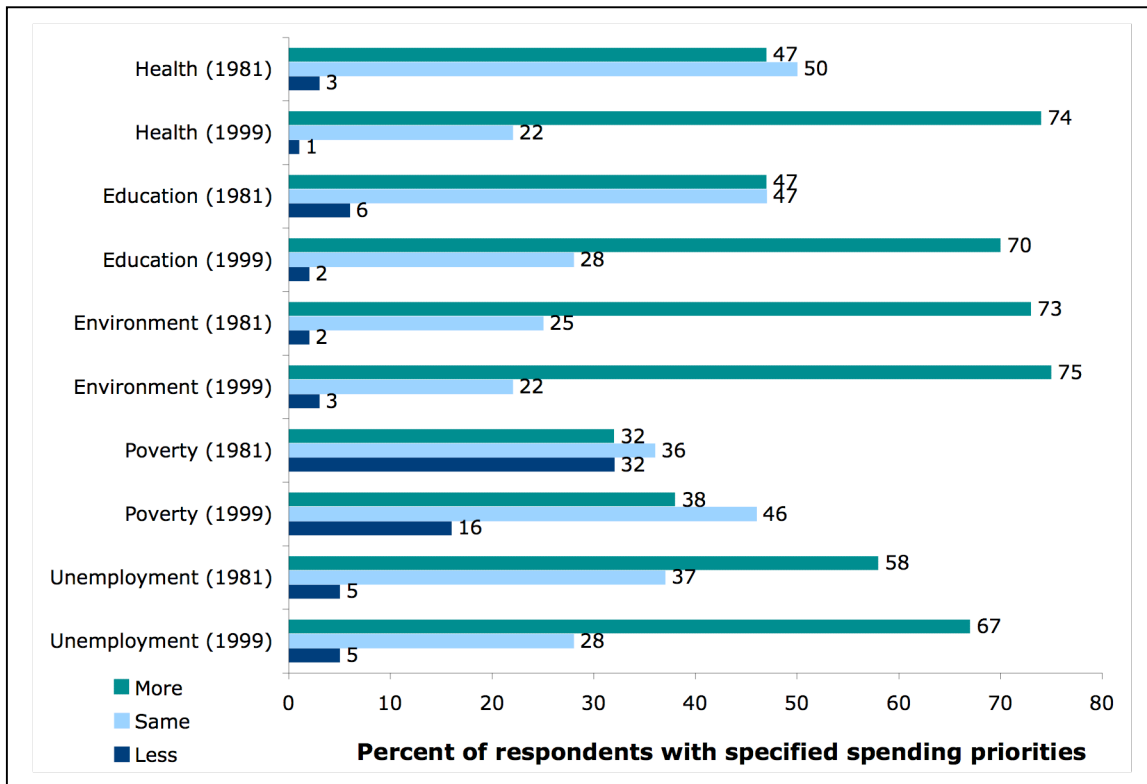
Note: Question asked was: We would like to know how much effort you think governments should put into a number of activities. For each area, please tell me whether you think government should put much more effort, more effort, about the same effort, less effort, or much less effort. Remember putting more effort into one of these areas would require a shift of money from other areas or an increase in taxes.

Source: Mendelsohn, Matthew. *Canada's Social Contract: Evidence from Public Opinion*. Canadian Policy Research Networks, Discussion Paper No. P|01, 2002, citing Institute for Social Research.

Mendelsohn also notes that there is a distinct disconnect between the attitudes, priorities and values of the Canadian public and the "Canadian elite," with the latter defined as business and public sector leaders and decision-makers.[634] On questions of productivity and competitiveness, for example, as shown in 2002 data in Figure 11 below, the Canadian elite put more emphasis on the importance of tax cuts for productivity than did the general public, which, contrariwise, put a higher emphasis on investments in learning for workers than did the elite.

In a 2002 report for CPRN, Laycock and Clark also point to differences between the

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[634] Definition of "Canadian elite" from Dobbin, Murray. *Is Canada's Elite at War with Its Citizens?*, The Tyee, 2004; accessed May 2006; available from http://thetyee.ca/Views/2004/11/19/IsCanadasEliteatWar/.

public and the elite.[635] For example, they note that freedom is defined, especially since the 1980s, by those particularly holding neo-conservative values, largely in terms of unconstrained marketplace behaviour, which places no "government constraint on the decisions of consumers, taxpayers and entrepreneurs."[636] In addition, Laycock and Clark note: "[This] redefinition of freedom […] is inconsistent with widely endorsed post-war Canadian understandings, where modest state-assisted reductions in social inequality are seen to be pre-conditions of, rather than obstacles to, meaningful freedom for most citizens."[637]

Figure 11. Percentage of Canadians preferring different methods to improve productivity by sector, by general and elite public, 2002
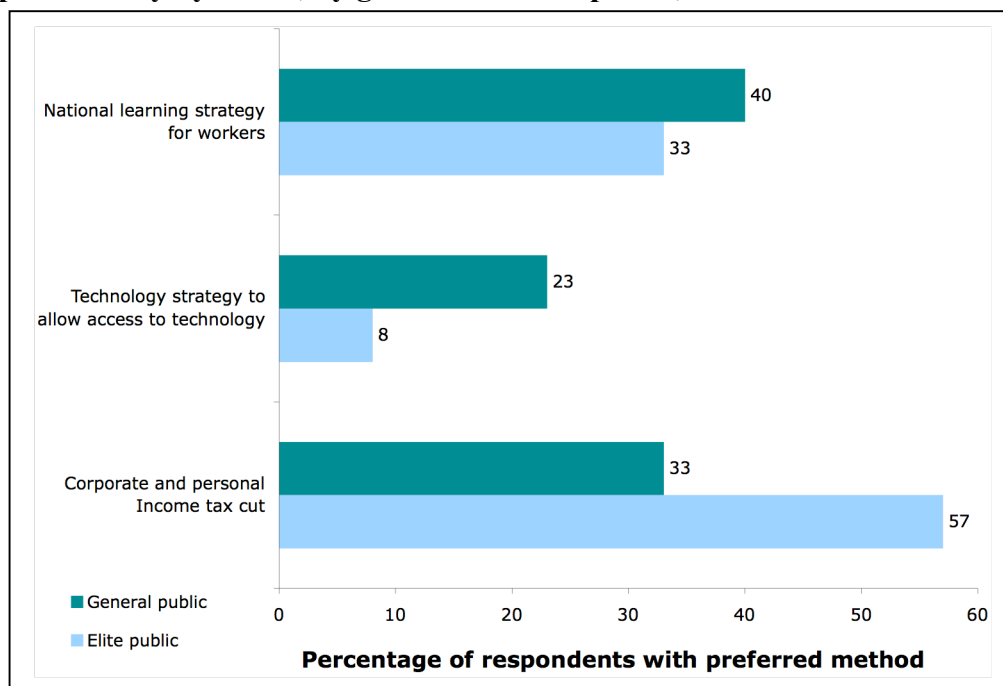
Note: "Elite public" is defined as those people holding positions as business or political leaders.

Source: Mendelsohn, Matthew. *Canada's Social Contract: Evidence from Public Opinion*. Canadian Policy Research Networks, Discussion Paper No. P|01, 2002, citing Ekos 2002.

Mendelsohn contends that Canadian society has undergone changes in social values in the past two decades, which is revealed in the patterns of generational differences on key questions. According to Mendelsohn, "on social and moral issues, Canadians have

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[635] Laycock, and Clarke. *Framing the Canadian Social Contract: Integrating Social, Economic and Political Values since 1940*, accessed. p. vi.
[636] Ibid., accessed. p. 33.
[637] Ibid., accessed. p. vii.

adopted positions associated with the Left and are increasingly accepting of less traditional family structures and lifestyles, with the exception of many older Canadians who are less comfortable with this."[638] This generational difference also can be seen in questions concerning protecting the environment. Data Mendelsohn uses to illustrate this point are from Environics polls from the early 1990s, although he notes that this pattern "remained unwavering through the 1990s."[639] In the early and mid-1990s, younger people, ages 18 to 24, were more concerned with protecting the environment than were older Canadians, who were more concerned with economic growth, as seen in Figures 12–14 below.

Figure 12. Percentage of Canadians ranking the importance of preserving the environment, by age cohort, 1994
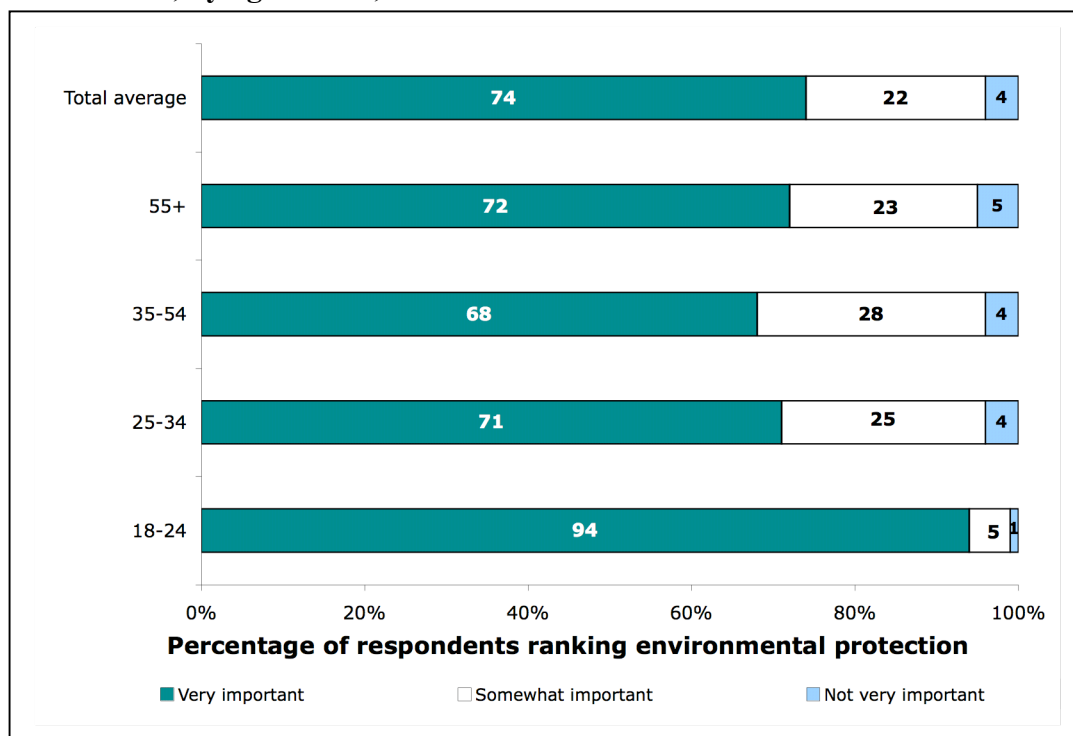
Source: Mendelsohn, Matthew. *Canada's Social Contract: Evidence from Public Opinion*. Canadian Policy Research Networks, Discussion Paper No. P|01, 2002, citing Environics 1994.

[638] Mendelsohn. *Canada's Social Contract: Evidence from Public Opinion*, accessed. p. 19.
[639] Ibid., accessed. p. 18.

Figure 13. Percentage of Canadians ranking relative priorities of the environment and the economy, by age cohort, 1990
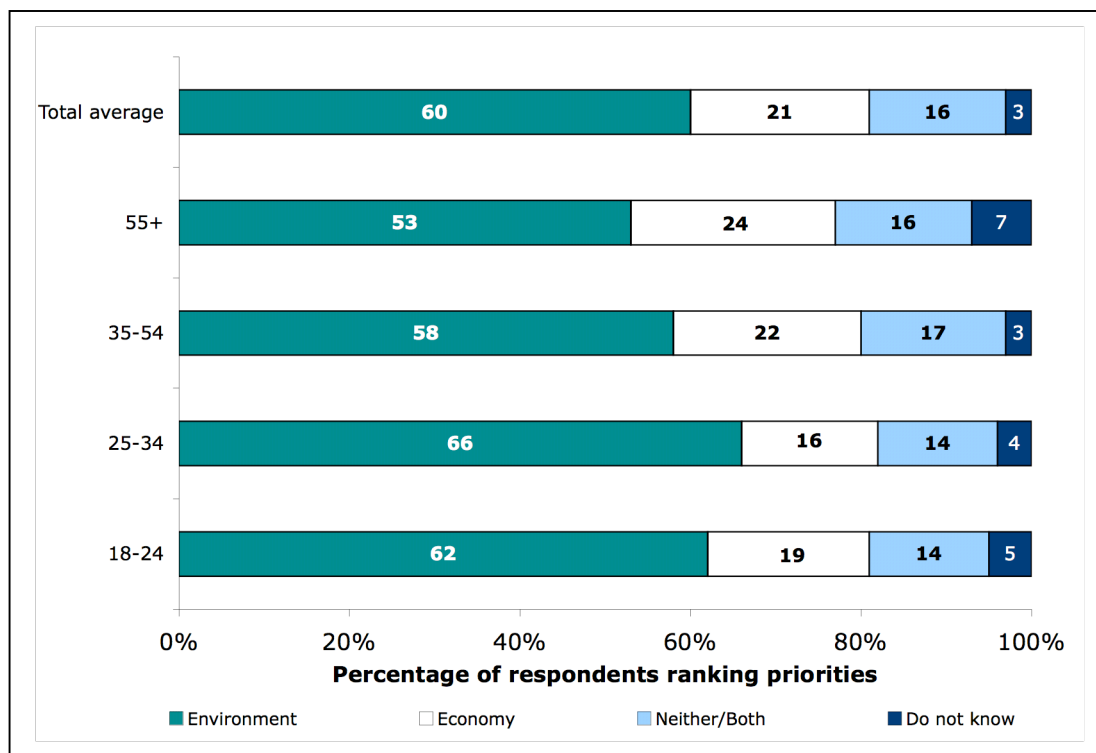
	Environment	Economy	Neither/Both	Do not know
Total average	60	21	16	3
55+	53	24	16	7
35-54	58	22	17	3
25-34	66	16	14	4
18-24	62	19	14	5

Percentage of respondents ranking priorities

■ Environment □ Economy ■ Neither/Both ■ Do not know

Source: Mendelsohn, Matthew. *Canada's Social Contract: Evidence from Public Opinion*. Canadian Policy Research Networks, Discussion Paper No. P|01, 2002, citing Environics, 1990.

Figure 14. Percentage of Canadians ranking government spending on environmental protection, by age cohort, 1990
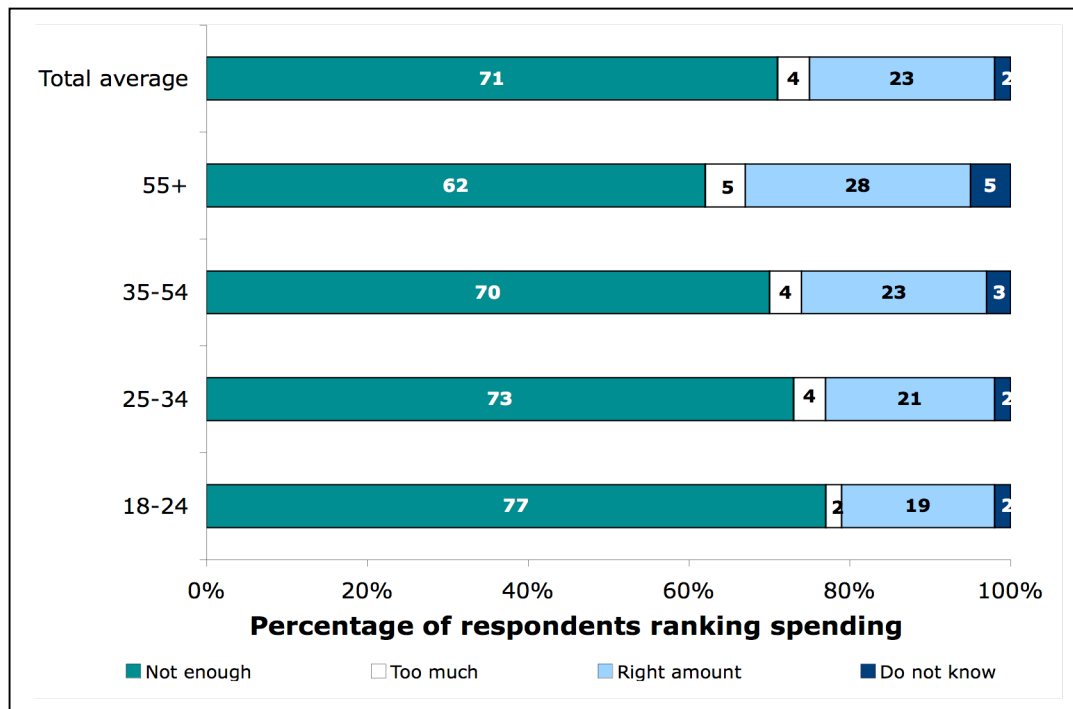
Note: Question asked was Keeping in mind that increasing services could increase taxes, do you think the federal government is spending too much, just the right amount, or should be spending more on each of the following: Environmental protection?

Source: Mendelsohn, Matthew. *Canada's Social Contract: Evidence from Public Opinion*. Canadian Policy Research Networks, Discussion Paper No. P|01, 2002, citing Environics, 1990.

Canadian Policy Research Networks (CPRN) Social Architecture series

In June 2004, the Canadian Policy Research Networks (CPRN) released its eighth paper in the Social Architecture series, *Citizens' Values and the Canadian Social Architecture: Evidence from the Citizens' Dialogue on Canada's Future.*[640] Written by Mary Pat MacKinnon, then director of CPRN's Public Involvement Network, the paper is focused on the premise that a new social architecture must be based on citizens' values and that "Canada needs a 'moral compass' to guide behaviours in all spheres of private and public life."[641] MacKinnon draws on 10 day-long, structured dialogues with 400 diverse participants throughout Canada, which were sponsored by CPRN in the fall of 2002.

MacKinnon argues:

> [D]espite regional, linguistic, ethnic, cultural and socio-economic differences, citizens found they had many shared values and these values reinforced their sense of attachment to their shared community of Canada […]. It is through this sense of shared community that they shaped a sense of collective rather than individual or narrower group interest."[642]

The core Canadian values that came out of these dialogues were based on compassion, justice, and equality with particular emphasis on shared community, respect for diversity and lifestyle choices, mutual responsibility of all interconnected societal actors, accountability and ethical behaviour, and engaged democracy.[643] MacKinnon records that the names and concepts given to the values came directly from the dialogue group participants, rather than from the facilitators and report authors, with the exceptions of "shared community" and "engaged democracy," which were used to capture the essence of what the participants were describing.

Participants of the dialogue groups discussed different scenarios, involving competing views, for the future. As MacKinnon, et al. note in an earlier report: "The first set of views dealt with how much emphasis to put on market values as opposed to values of social equity and civil society."[644] In this scenario, a society based on market values was described as being able:

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[640] MacKinnon, Mary Pat. *Citizens' Values and the Canadian Social Architecture: Evidence from the Citizens' Dialogue on Canada's Future*, Research report F/42, Family Network, Canadian Policy Research Network, 2004; accessed December 2004; available from http://www.cprn.com/en/doc.cfm?doc=877.

[641] Ibid., accessed.

[642] Ibid., accessed. pp. v, 9.

[643] Ibid., accessed.

[644] MacKinnon, Mary Pat, Judith Maxwell, Steven Rosell, and Nandini Saxena. *Citizens' Dialogue on Canada's Future: A 21st Century Social Contract*, Canadian Policy Research Networks, 2003; accessed December 2004; available from http://www.cprn.com/en/doc.cfm?doc=145. p. 7.

… to make Canada more innovative, competitive and productive, providing greater opportunities for Canadians to excel and improve our standard of living. It is a Canada where competition in every sphere keeps prices low and increases consumer choice. In this Canada taxes are lower and government policies are designed to provide only those services that the market cannot.[645]

A society based on social equity and civil society values was described as being able:

… to make Canada fairer and more equitable, providing greater help to those most in need so that no one is left behind. It is a Canada where we recognise that economic and social success depends on enabling all Canadians to participate and ensuring the benefits of that success are fairly distributed. In this Canada government plays a social investment role; economic, social and environmental policies are designed to work together to meet the needs of this generation without compromising the needs of future generations.[646]

The result of the dialogue sessions concerning these two scenarios was that participants were willing to accept the market-based scenario provided that certain conditions were included. These conditions included the provisions that:

- Social equity, social supports and a safety net are maintained or strengthened
- Governments play a key role in enforcing environmental regulations and standards and in providing incentives to develop environmentally friendly technologies
- Governments hold corporations accountable for their actions
- Governments ensure accessible education and training.[647]

Specific participant comments included the following:

A Vancouver participant stipulated that support for scenario 1 was conditional on, 'It's developed with social / environment as the cornerstone of the market. Eco-enterprise.' Another citizen from the Montréal session wrote, 'I fully agree with preserving the environment; without the environment, there is no market.'[648]

In terms of the environment, MacKinnon, et al. stress:

All dialogues reached the same unequivocal conclusion: when it comes to protecting the environment and public health, government must be in the driver's

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[645] Ibid., accessed. p. 7.

[646] Ibid., accessed. p. 7.

[647] MacKinnon. *Citizens' Values and the Canadian Social Architecture: Evidence from the Citizens' Dialogue on Canada's Future*, accessed. p. 12.

[648] MacKinnon, Maxwell, Rosell, and Saxena. *Citizens' Dialogue on Canada's Future: A 21st Century Social Contract*, accessed. p. 9.

seat. From citizens' perspective, it is unrealistic to expect industry to self-regulate its behaviour so as to ensure a safe environment, and protect the country's natural resources. And the same argument was applied to the companies that produce pharmaceuticals and other health products and services […].

Governments must move the yardstick higher to help ensure future well-being. Citizens recognized and accepted the possibility that stricter environmental and health protection regimes would likely lead to higher consumer prices for goods and services and a narrowing of choice for some consumer goods and services. This is a trade-off they were willing to make […].

Governments have a fundamental responsibility to protect the environment that cannot be delegated to markets. But at the same time citizens saw value for governments to identify, develop and implement effective market-based incentives to influence behaviour change at the industry, institution and individual level. Citizens talked about full cost accounting as an example of a market-based incentive. When they adopted a longer-term perspective, citizens expressed a willingness to pay the real cost of resources such as water because they believe that this would lead to more conservation […].

Citizens were ready to take more responsibility for their own individual lifestyle and consumer choices to improve environmental and personal health outcomes. To do so, however, they insisted on having better and more accessible information—from business and governments […].

In considering access to new health products, drugs and technologies most citizens argued that high standards and rigorous testing must be maintained and strengthened. Citizens agreed that drug and health products / services testing must not be left to industry.[649]

There was a consensus "that governments not permit corporate interests to override the public interest" and that the private sector "exercise greater corporate social responsibility, which included taking more responsibility for social issues and investing more in upgrading employees' skills."[650] In addition, MacKinnon, et al. note: "Citizens insisted that the pursuit of excellence and competitiveness must not be at the expense of social equity and inequality."[651]

Support for the social equity and civil society scenario was conditional upon four conditions: "Society has to provide its citizens with a 'hand up, not a hand out' and build policies and programs that 'help people to help themselves' and to participate in a

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[649] Ibid., accessed. pp. 25–26.
[650] Ibid., accessed. p. 9.
[651] Ibid., accessed. p. 9.

'working society.'"[652] Equitable access to education and training was seen as the main way to achieve greater equality. MacKinnon notes:

> [E]xtremes of poverty and wealth aren't tolerated; and governments are in the driver's seat when it comes to setting the rules of the game and protecting the environment. An implicit trade off is the acceptance of some limitations on individual wealth accumulation in exchange for greater social equity.[653]

The deliberative dialogue sessions were structured according to a process designed by Daniel Yankelovich, considered by some to be the founding father of public opinion research in the United States.[654] His company, Viewpoint Learning of California, also managed the CPRN project. In reviewing the results, Yankelovich noted both similarities and differences between the United States and Canada.[655] He found that both countries are highly pluralistic in terms of ethnicity, values, and lifestyles, attached to a work ethic of individual responsibility, cynical about both government and business, and convinced that education is the key to social mobility. However, Yankelovich found that Canadians view the role of government differently, place their sense of individualism within the context of community values, base social morality on shared norms, and view themselves as part of the international community.

These four key differences Yankelovich identified as those:

1. *Concerning government and the market*: Americans see the government as enforcing the law and catching cheaters in the marketplace, while Canadians see the government as guaranteeing protections the market cannot provide.
2. *Concerning the individual and the community*: Americans have more tolerance for inequality than do Canadians. According to Yankelovich, the dominant form of American individualism is "an assertive, competitive, my-needs-come-first variety," while, in Canada, "individualism is tempered by a sense of community and a rejection of gross inequalities at the level of basic human needs such as health care and shelter."
3. *Concerning social morality:* In the U.S., "Morally acceptable behaviour is defined in terms of law rather than social norms," ("if it's not illegal, it's OK") and to religion, which leads Americans to prefer "highly punitive responses to those who trespass." In Canada, social morality is based more on a common set of shared norms than on legalities.

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[652] Ibid., accessed. p. 11.
[653] MacKinnon. *Citizens' Values and the Canadian Social Architecture: Evidence from the Citizens' Dialogue on Canada's Future*, accessed. p. 12.
[654] Goar, Carol. "We Do Have Distinctive Values," *The Toronto Star*, April 21, 2003.
[655] Yankelovich, Daniel. "Canadian and American Values," in *Citizens' Dialogue on Canada's Future: A 21st Century Social Contract*, ed. MacKinnon, Mary Pat, Judith Maxwell, Steven Rosell and Nandini Saxena. Ottawa: Canadian Policy Research Networks, 2003.

4. *Concerning attitudes toward other countries:* Canadians have a deeper sense of interdependence with other countries, while Americans feel more independent.[656]

As MacKinnon, et al. note, these differences point to the fact that Canadians do have core values distinct from values held by Americans.[657] They also note that, while values have remained unchanged since the 1995 dialogues conducted by Suzanne Peters, the issues have changed and broadened somewhat. For example, "Investment in the future, especially in children, was a core value in 1995. By 2002 the investment theme had strengthened and broadened to include the right of every child, youth, and adult to receive support to become a fully contributing citizen."[658] In addition, while self-reliance and compassion leading to collective responsibility were important in 1995, in 2002, mutual responsibility of everyone in society also was emphasized. The role of the government in protecting the environment for future generation has also strengthened. In conclusion, the authors suggest that Canadian core values are important elements on which policy can be based and on which Canadian society can be built and sustained.

5.5.2 Public values on sustainability: The Sustainability Research Initiative

In order to identify public values on sustainability, in February 2006 McAllister Opinion Research of Vancouver, in connection with the Sustainability Research Initiative led by James Hoggan and Associates and the Globe Foundation of Canada, conducted an on-line survey of 2,500 randomly selected adult members of the public in all Canadian provinces except Quebec.[659] According to Hoggan, the Sustainability Research Initiative is "the most comprehensive research program ever undertaken on the views and values of Canadians on the issue of sustainability."[660]

James Hoggan and Associates is a public relations firm concerned with environmental and sustainability issues. The Globe Foundation "promotes the $1.1 trillion international business of the environment."[661] McAllister Opinion Research conducts the Environmental Monitor, "Canada's longest running nationally syndicated poll on environmental and sustainability issues,"[662] which has a 17-year database accessible only

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[656] Ibid.

[657] MacKinnon, Maxwell, Rosell, and Saxena. *Citizens' Dialogue on Canada's Future: A 21st Century Social Contract*, accessed.

[658] Ibid., accessed. p. 38.

[659] Kane, Michael. "Canadians Want Tougher Laws to Protect the Environment." *The Vancouver Sun*, Vancouver, March 31, 2006 Business BC, page H3, reproduced by James Hoggan and Associates, accessed May 2006; available from http://www.hoggan.com/pdf/VancouverSun_Mar31.pdf.

[660] Hoggan, James. *Press Release from James Hoggan and Associates: Nine in 10 Canadians Fear Our Lifestyle Is Not Sustainable*, Vancouver, The Corporate Social Responsibility Newswire Service, 2006; accessed May 2006; available from http://www.csrwire.com/article.cgi/5317.html. p. 2.

[661] Kane. "Canadians Want Tougher Laws to Protect the Environment." p. 1.

[662] Hoggan. *Press Release from James Hoggan and Associates: Nine in 10 Canadians Fear Our Lifestyle Is Not Sustainable*, accessed. p. 3.

to clients through a $15,500 yearly subscription and an agreement to keep the data confidential.[663]

Hoggan presented results of the survey at the Globe 2006 environmental business fair in Vancouver in March 2006. The demographics of the survey respondents are as follows:

Residence
- Ontario—50%
- British Columbia—18%
- Alberta—13%
- Saskatchewan and Manitoba—9%
- Atlantic provinces—10%

Age
- Between ages 35–54—40%
- Under age 35—29%
- Over age 54—28%

Educational attainment
- Some college or university education—26%
- University graduates—24%
- Trades, college or vocational training—24%
- High school education—14%
- Post-graduate degree—9%

Employment status
- Full-time employment—53%
- Part-time employment—16%
- Retired—12%
- Students or unemployed—11%
- Homemakers—8%[664]

One of the most surprising results of the survey was that 53% of the respondents were not familiar with the term "sustainability," and 70% of the respondents could not define the term. However, once the term sustainability was defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs,"[665] over 80% of the respondents ranked sustainability as a "top or high" national priority.[666] In addition, the main reasons stated for their own lack of

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[663] McAllister Opinion Research. *Environmental Monitor Subscription*, Vancouver, 2006; accessed May 2006; available from http://www.mcallister-research.com/EMSF2006-1.pdf.

[664] Hoggan. *Press Release from James Hoggan and Associates: Nine in 10 Canadians Fear Our Lifestyle Is Not Sustainable*, accessed. p. 1.

[665] Kane. "Canadians Want Tougher Laws to Protect the Environment." p. 1.

[666] Hoggan. *Press Release from James Hoggan and Associates: Nine in 10 Canadians Fear Our Lifestyle Is Not Sustainable*, accessed.

proenvironmental behaviour were a lack of government leadership, inadequate information, and a feeling that other people are not concerned.[667]

Highlights of the survey are shown in Figures 15–18 below.

Figure 15. Percentage of Canadians citing main reasons they do not behave sustainably, 2006
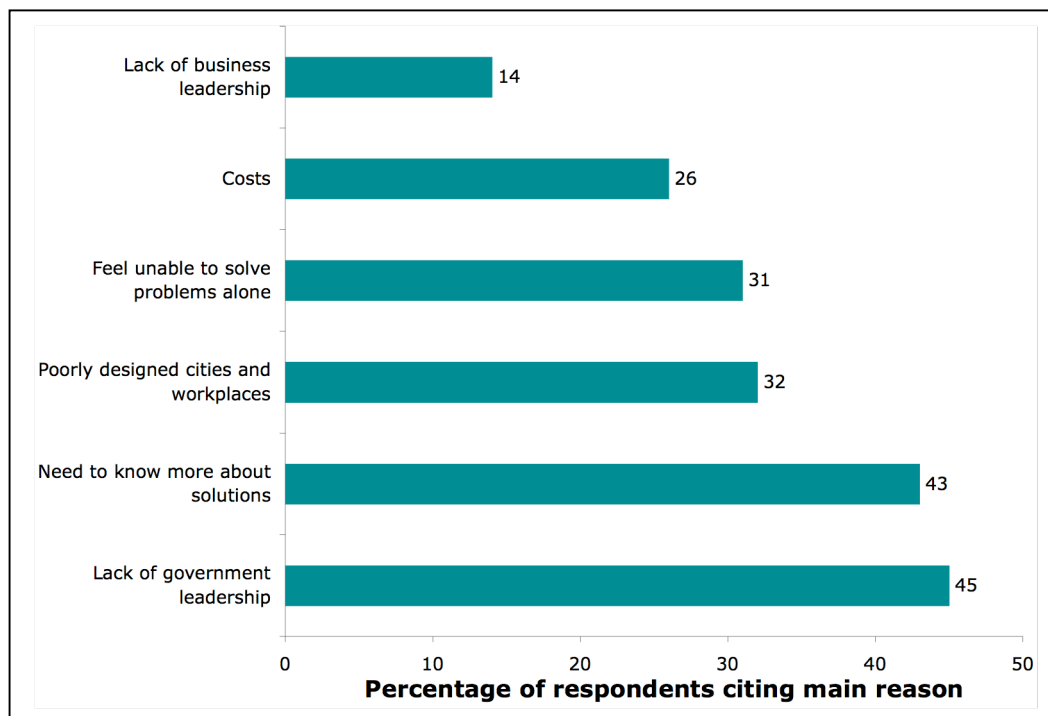
Note: Question asked was: What are the main reasons <u>you</u> do not behave sustainably?

Source: Hoggan, James. *Globe Presentation: Communicating Sustainability*, Vancouver, James Hoggan and Associates, Inc., 2006; accessed May 2006; available from http://www.hoggan.com/pdf/Hoggan_sustainability_presentation_GLOBE.pdf.

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[667] Kane. "Canadians Want Tougher Laws to Protect the Environment."

Figure 16. Percentage of Canadians citing main reasons that Canadians do not behave sustainably, 2006
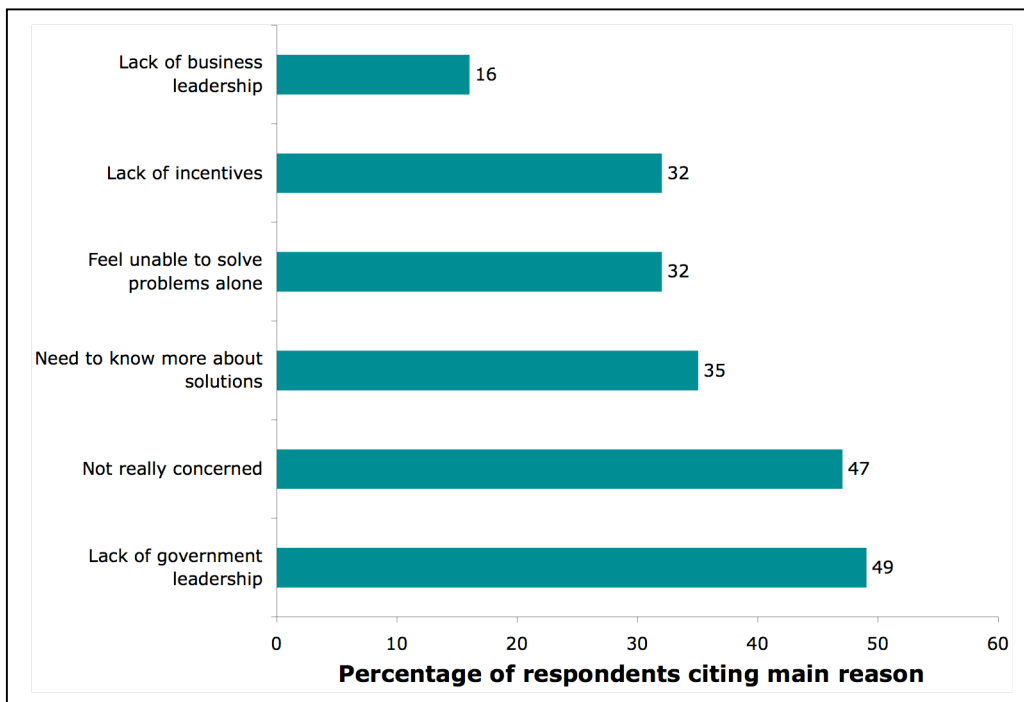
Note: Question asked was: What are the main reasons <u>Canadians</u> do not behave sustainably?

Source: Hoggan, James. *Globe Presentation: Communicating Sustainability*, Vancouver, James Hoggan and Associates, Inc., 2006; accessed May 2006; available from http://www.hoggan.com/pdf/Hoggan_sustainability_presentation_GLOBE.pdf.

Figure 17. Percentage of Canadians who think a sustainability policy would have a negative or positive impact, 2006
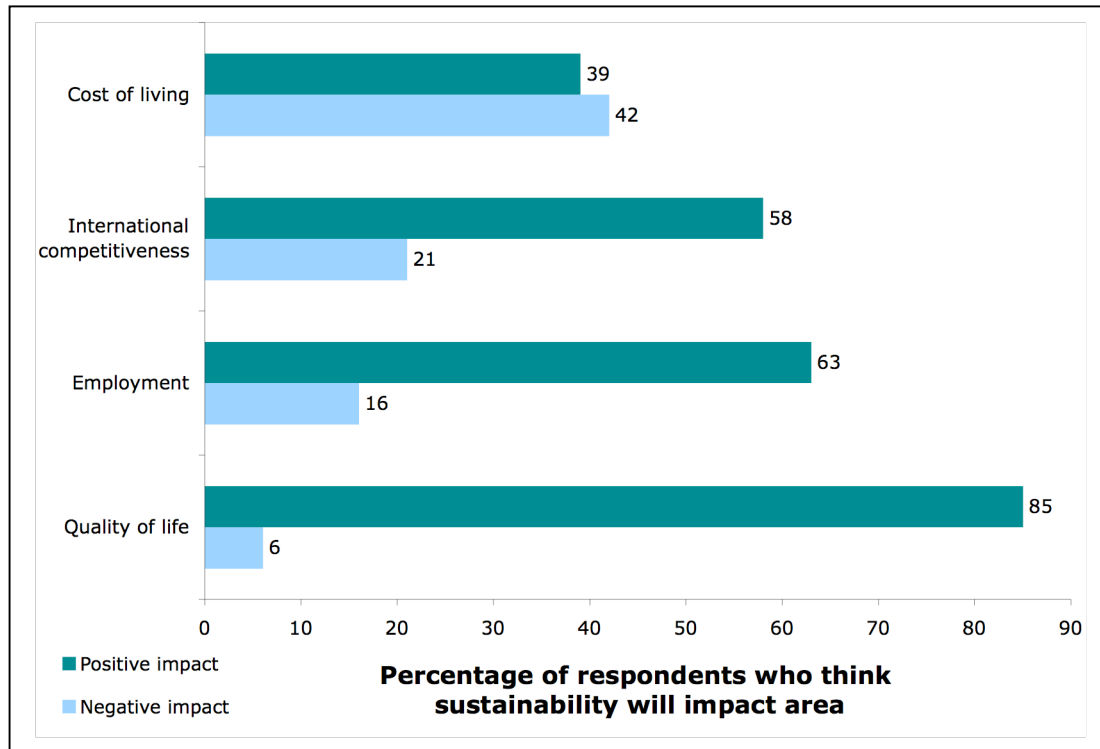
Note: Question asked was: If Canada adopted sustainability as a top priority tomorrow, how much of a positive or negative impact would it have on the following?

Source: Hoggan, James. *Globe Presentation: Communicating Sustainability*, Vancouver, James Hoggan and Associates, Inc., 2006; accessed May 2006; available from http://www.hoggan.com/pdf/Hoggan_sustainability_presentation_GLOBE.pdf.

Figure 18. Percentage of Canadians who agree or disagree with sustainability statements, 2006
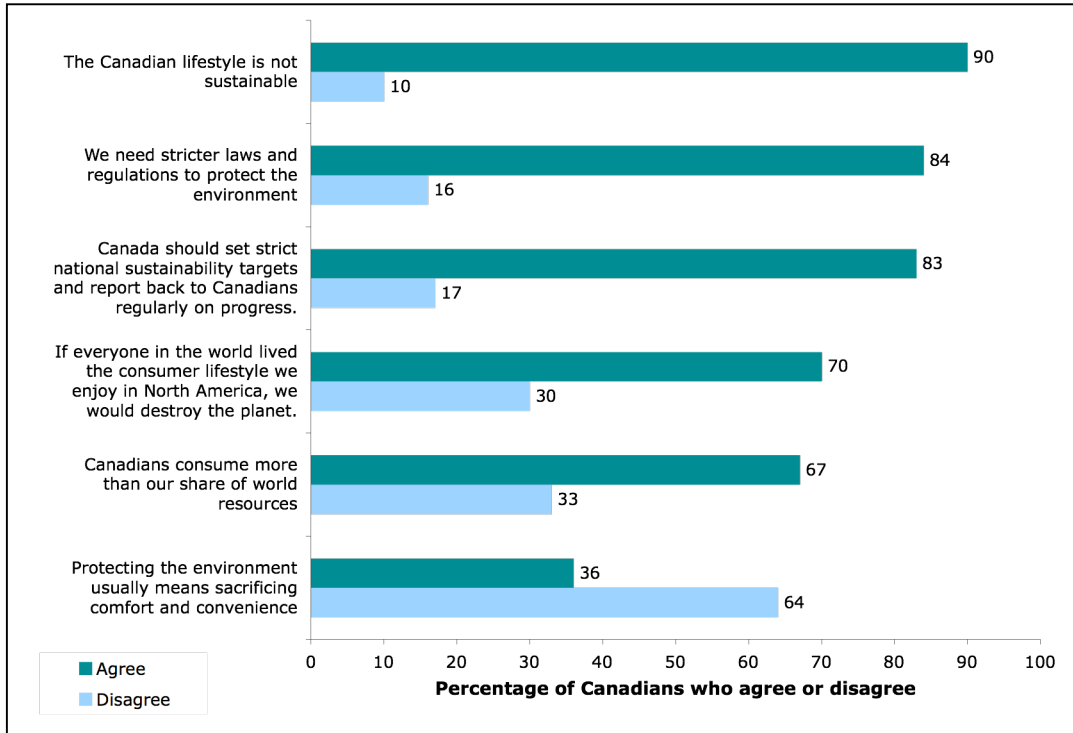
Sources: Hoggan, James. *Globe Presentation: Communicating Sustainability*, Vancouver, James Hoggan and Associates, Inc., 2006; accessed May 2006; available from http://www.hoggan.com/pdf/Hoggan_sustainability_presentation_GLOBE.pdf

Hoggan, James. Press Release from James Hoggan and Associates: Nine in 10 Canadians Fear Our Lifestyle Is Not Sustainable, Vancouver, The Corporate Social Responsibility Newswire Service, 2006; accessed May 2006; available from *http://www.csrwire.com/article.cgi/5317.html.*

5.5.3 Centre for Research and Information on Canada (CRIC): Portraits of Canada survey[668]

According to polls, the concern for protecting and caring for the environment is a high priority for Canadians. The Centre for Research and Information on Canada (CRIC) conducts an annual tracking poll and reports its findings in its *Portraits of Canada* report.[669] Results for 1998 & 2000 are shown in Figures 20–21 below, and results for 2003–2005 are shown in Tables 9–10 and Figure 19 below. In 2004, respondents were asked to rank a list of 11 priority choices for government. Protecting the environment was the top priority of 76% of adult Canadians across the country. According to Donna Dasko, Senior Vice President for Environics Research Group, this is the first time in over 10 years that environmental protection has ranked this high in public concern. In the 2003 poll, the environment was not included in the list of potential priorities.

In 2004, spending on health care and increased federal provincial co-operation were close behind the environment with 75% and 74% of adult Canadians, respectively, making these the 2nd and 3rd priorities. In 2003, support for health care was the most important priority, with 73% of Canadians ranking it number one. In 2004, 59% of Canadians felt that the provinces should retain control of the education system, and in 2003, 69% of Canadians thought there should be more funding of education and training. Education was not listed among the 11 priorities for the federal government, presumably since education is in the provincial jurisdiction.

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[668] Centre for Research and Information on Canada (CRIC). *Portraits of Canada Survey (1998-2005)*, 2005; accessed March 2006; available from http://www.cric.ca/. After this report was completed it was discovered that, as of April 2006, the government discontinued funding to CRIC and dissolved the organization.

[669] Centre for Research and Information on Canada (CRIC). *Portraits of Canada, 2004*. Vol. 2005 CRIC, 2005.

Table 9. Percentage of Canadians who think the item is a high priority for government action, 2003–2005

Items	Percentage of adults		
	2005	**2004**	**2003**
1. Protecting the environment	78	76 (1)	-
2. Spending more money on health care	74	75 (2)	73 (1)
3. Maintaining a balanced budget	73	-	-
4. Spending more money on education and training	70	-	69 (3)
5.Increasing co-operation between the federal and the provincial / territorial governments	66	74 (3)	70 (2)
6. Tighter ethics rules for government and parliaments	66	-	-
7. Protecting Canadians against terrorist threats	55	-	-
8. Paying down the national debt	48	-	-
9. Cutting taxes	47	48 (7)	41 (6)
10. Reducing regional economic inequalities	45	-	40 (7)
11. Transferring more powers from the federal to the provincial / territorial governments	36	-	32 (9)
12. Having closer relations between Canada and the United States	31	37 (8)	42 (5)

Note: Items in parentheses indicate the ranking within the 12 items. In 2005, these items were not ranked. A hyphen (-) indicates that the item was not included in that year.

Source: Centre for Research and Information on Canada (CRIC). *Portraits of Canada Survey (1998–2005)*, 2005; accessed March 2006; available from http://www.cric.ca.

Table 10. The six highest priorities for government action, as ranked by survey respondents, by region, 2005

Priority	Atlantic		Quebec		Ontario		West		North	
	Issue	**%**	**Issue**	**%**	**Issue**	**%**	**Issue**	**%**	**Issue**	**%**
1.	Environ-ment	85	Environ-ment	85	More health care money	75	Environ-ment	76	Environ-ment	89
2.	More education money	81	More health care money	77	Environ-ment	73	Balance budget	72	More education money	72
3.	More health care money	71	Balance budget	75	Balance budget	73	More health care money	69	More govern-ment co-operation	65
4.	Tighter ethics rules for govern-ment	68	More education money	75	More education money	69	More govern-ment co-operation	68	Balanced budget	59
5.	More govern-ment co-operation	67	More govern-ment co-operation	72	Tighter ethics rules for govern-ment	65	Tighter ethics rules for govern-ment	67	More health care money	57
6.	Protecting Canadians from terrorist threats	66	Tighter ethics rules for govern-ment	63	More govern-ment co-operation	60	More education money	66	Protect-ing Canadians & Tighter ethics rules tied	50

Source: Centre for Research and Information on Canada (CRIC). *Portraits of Canada Survey*. 1998–2005. Accessed March 2006. Available from http://www.cric.ca.

Figure 19. Percentage of Canadians who chose the environment as the highest priority for government, by region, 2004 and 2005
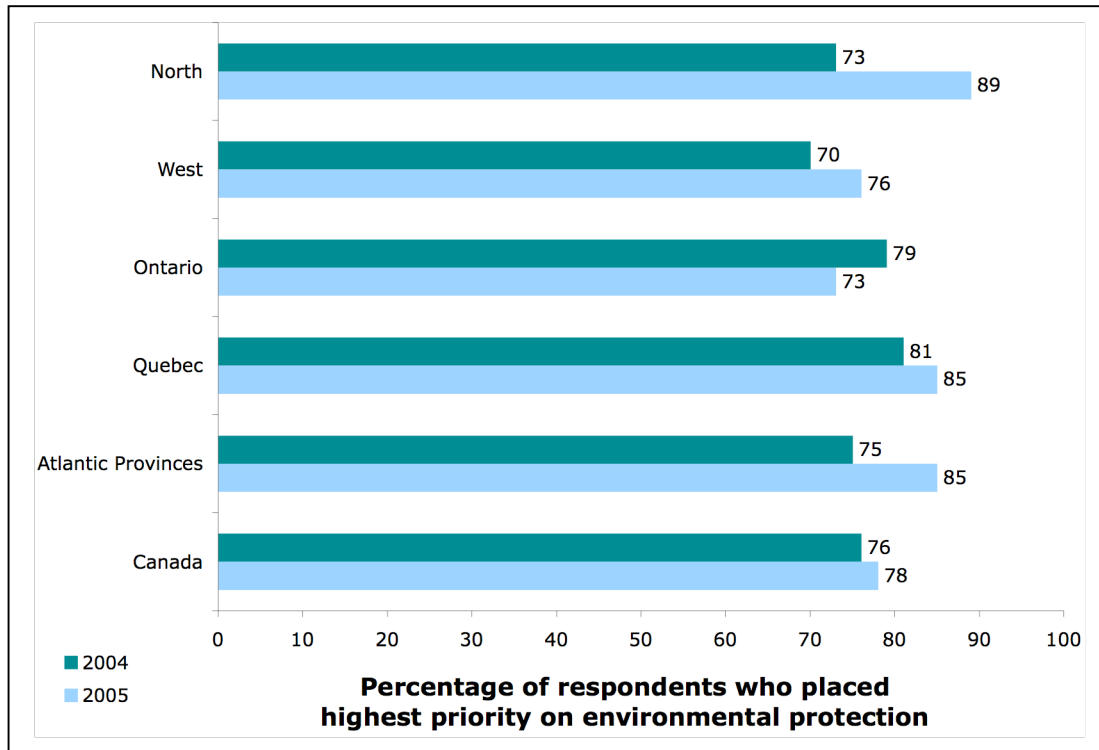
Source: Centre for Research and Information on Canada (CRIC). *Portraits of Canada Survey*. 1998–2005. Accessed March 2006. Available from http://www.cric.ca.

Figure 20. Percentage of Canadians who think it is or is not important for the government to protect the environment, 1998 and 2000
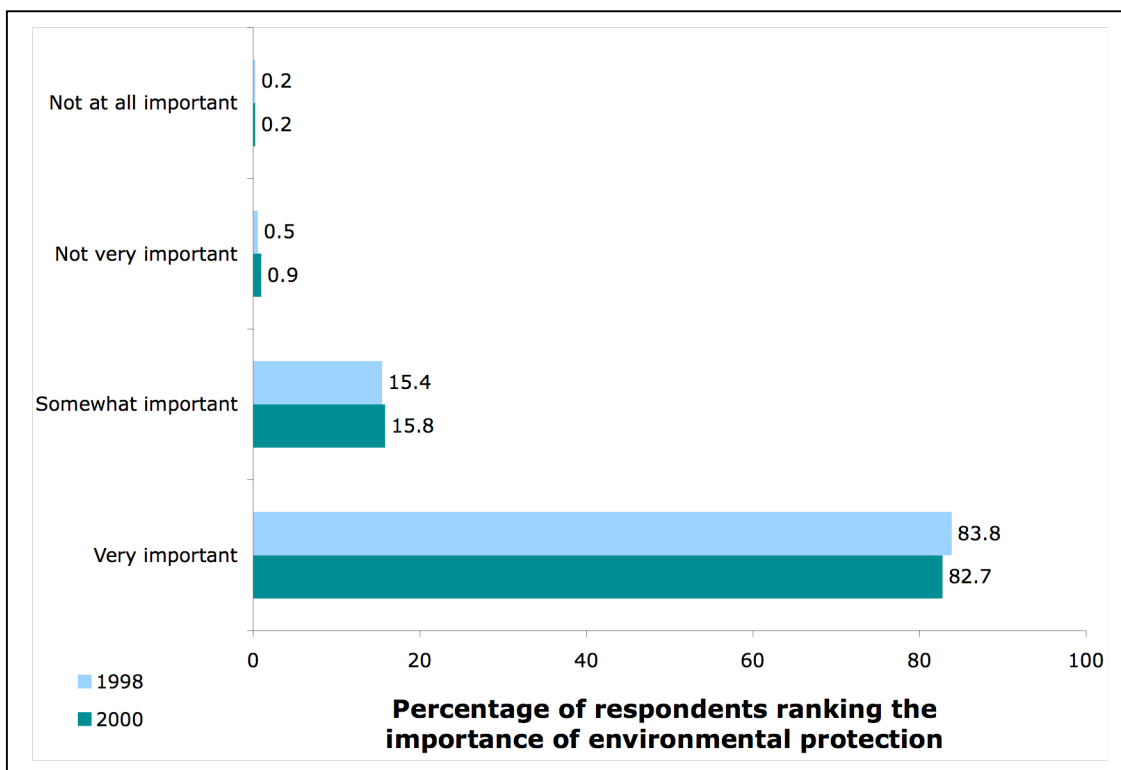
Source: Centre for Research and Information on Canada (CRIC). *Portraits of Canada Survey*. 1998–2005. Accessed March 2006. Available from http://www.cric.ca.

Figure 21. Percentage of Canadians who think Canada is or is not doing well in protecting the environment, 1998 and 2000
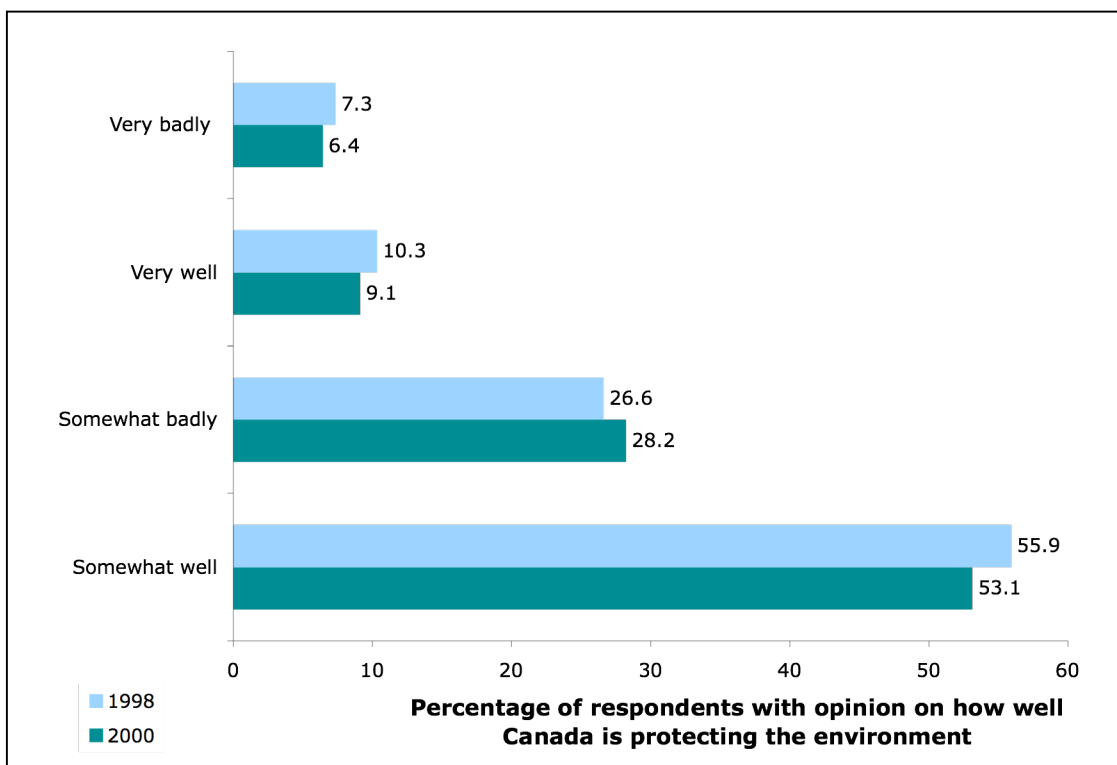
Source: Centre for Research and Information on Canada (CRIC). *Portraits of Canada Survey*. 1998–2005. Accessed March 2006. Available from http://www.cric.ca.

5.5.4 The CRIC-Globe and Mail Survey on "The New Canada"

A major survey was undertaken in Canada in 2003 to provide data on the evolution of Canadian attitudes and values.[670] Conducted by Ipsos-Reid and designed by the Centre for Research and Information on Canada (CRIC), the *Globe and Mail*, and the Canadian Opinion Research Archive (CORA), the telephone survey sampled 1,000 Canadians between ages 18 and 30, and 1,000 Canadians ages 31 and older.

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[670] Centre for Research and Information on Canada (CRIC), *Globe and Mail*, and Canadian Opinion Research Archive (CORA). *The CRIC-Globe and Mail Survey on "The New Canada"*, Canadian Opinion Research Archive, Queen's University, 2003; accessed November 2005; available from http://jeff-lab.queensu.ca/poadata/info/cric/cricgmnc03.shtml.

The questionnaire asked 24 questions, many with multiple parts, plus 15 demographic questions that requested information on respondents' highest level of formal education completed, marital status, language spoken in the home, number of children under 18 living at home, church or religious affiliation and attendance, sexual orientation, and ethnicity. The 24 questions are reproduced in Appendix 22. The questionnaire, results, and data analysis can be found online at the CORA website (http://www.queensu.ca/cora).[671] Below are a few highlights.

Concerning the results of the survey in the *Globe and Mail*, Matthew Mendelsohn, director of the Canadian Opinion Research Archive, reports:

> Young Canadians and young Americans have grown apart in many of their values, despite the increased integration of our economies and societies. Unlike in Europe, where a common European identity is developing, no common North American identity exists. The notion that Canadians and Americans are becoming indistinguishable because we watch the same TV shows is a fiction […].
>
> The new Canadian identity is not tied to institutions created or maintained by the federal government. It is about how we live and about a set of unique values connected to multiculturalism, individual rights, the Charter, social egalitarianism, internationalism, bilingualism, peacekeeping, the environment, social liberalism, living within our means, and getting along with each other.[672]

Anderssen and Valpy also report results of the survey in the *Globe and Mail*:

> [Canada's young adults] have remarkably similar values, as the *Globe and Mail*'s New Canada series has demonstrated […]. They have attitudes and an approach to life that markedly distinguish them from young Americans and young Europeans. They are pursuing democracy in the workplace and in marriage. They are a global generation, committed to issues of tolerance and social justice. They are a generation led in so many ways by its women. They are, of course, the best-educated generation the country has ever produced, possibly the best-educated generation of young adults in the world.
>
> And always keep this in mind about them, because it is the generation's most significant characteristic: They are not a sudden sociological phenomenon; they are a generation whose values have evolved from those of the generations preceding them […].

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[671] Canadian Opinion Research Archive (CORA). *Website*, Kingston, ON, CORA, Queens University, accessed April 2005; available from http://www.queensu.ca/cora.
[672] Mendelsohn, Matthew. "Listen up, Canada." *Globe and Mail*, Toronto, July 2, 2003, accessed August 2006; available from http://www.cric.ca/pdf_re/new_canada/listenup_02.07.03.pdf.

As the Canadian and U.S. economies are converging, Canadian and American cultural values are diverging. Indeed, young adults in the two countries tend to hold quite opposing attitudes on collective social responsibility and materialism.[673]

The above discussion of Canadian values has pointed to many ways in which Canadian and American values diverge, and emphasized that it is difficult to discuss "Western" values as if they were the same in every country. Indeed, the Canadian values, with their emphasis on social responsibility and collectivity, peacekeeping, sustainability, etc., are much closer to GNH values than are those of Americans.

5.6 Indigenous knowledge and values

5.6.1 Basic definition and importance of Indigenous knowledge

Many observers note that the values, norms, beliefs, knowledge, expectations, and conventional actions of peoples in non-Western cultures often contrast substantially with those that are dominant in Western scientific culture. [674, 675] U.S. researchers Stephen Fain, et al. suggest that, if knowledge acquisition and understanding is a central aim of

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[673] Anderssen, Erin, and Michael Valpy. *"The Wrap-up"*, Globe and Mail, 2003; accessed August 2006; available from http://www.cric.ca/pdf_re/new_canada/wrapup_01.07.03.pdf.

[674] A note on terms and capitalizations: *First Nation* and *Inuit* cultures in the Western hemisphere are widely considered to be "non-Western cultures" and are therefore included here in this characterization. Both First Nation/s and Inuit people are considered to be Aboriginal people. However, the Inuit people are usually considered separately from First Nation people. First Nation people include both "status" and "non-status Indians." *Indian* is considered an outdated term not used by Aboriginal people, but is still used in government departments and documents. *Aboriginal* is a modifier and is not used as a noun by Indian and Northern Affairs Canada (INAC), e.g., Aboriginal people or Aboriginal rights, not Aboriginals. The term is always capitalized, in the same way that other designations like Francophone are capitalized. INAC also states that one should avoid describing Aboriginal people as "belonging" to Canada, e.g., Aboriginal people in Canada, not Canada's Aboriginal people. The term, *First Nation*, is acceptable as both a noun and a modifier and is always capitalized, and may be used in singular or plural forms. The term *Indigenous* is used more often internationally than is Aboriginal, which is used more often in Canada, and we use Indigenous here to be inclusive. It is always used as a modifier and not as a noun. In the literature, it is used in both capitalized and non-capitalized forms, although academics and Aboriginal people tend to capitalize it. We have capitalized it here, except within quotations where it is not capitalized, since Indian and Northern Affairs Canada states that *Indigenous* should be used in the same manner as *Aboriginal*, and therefore should be capitalized. The term *elder* is also used in capitalized (as an honourific term) and non-capitalized forms in the literature, but we do not capitalize it, since it is not capitalized in the Government of Nunavut documents we consulted. Of course, within quotations, terms remain as in the original. See: Indian and Northern Affairs Canada (INAC). *Words First: An Evolving Terminology Relating to Aboriginal Peoples in Canada*, Communications Branch, INAC, 2002; accessed August 2006; available from http://www.ainc-inac.gc.ca/pr/pub/wf/wofi_e.pdf.

[675] Aikenhead, Glenn S. "Toward a First Nations Cross-Cultural Science and Technology Curriculum," *Science Education*, vol. 81, no. 2, 1997: 217-238.

education, then morality, or values, should be a key goal of learning in any system—as are GNH values in the proposed Bhutanese education system. They suggest that such an acknowledgement coincides with the traditional forms of education used by Indigenous cultures—which are often based on holistic, interconnected, ecological sustainability, and social values, that are close to GNH values in many ways. Fain et al. also suggest that Indigenous values can constitute a useful bridge between Western and Indigenous knowledge systems. They therefore outline these learning principles in universal terms:

> Morality becomes the barometer whereby knowledge is judged. Knowledge of the physical world would give individuals a sound scientific understanding of the earth and its carrying capacity. Knowledge of the social world would provide understanding of the social, political and economic relationships that would allow for the interdependence of autonomous, collective and sustainable actions. Knowledge of the aesthetic world would allow for appreciation of the earth's natural beauty and of the beauty and meaning of human-made art. Knowledge of the moral world would provide insight into the duties and responsibilities of human beings related to the creation of a more sustainable future for this and future generations of *homo sapiens* […] Knowledge connotes more than science and technology. Knowledge is holistic and inclusive.[676]

However, as Eagleton expresses: "It is hard for a way of life whose priorities are secular, rationalist, materialist and utilitarian to produce a culture adequate to these values."[677]

Analysts often note that the processing of knowledge can best be understood in the context of "worldviews" or "knowledge systems," but most people, however, are not aware of their own worldviews.[678] Assumptions are generally passed down between generations, generally without enquiry or reservation, and serve as the unquestioned basis from which to evaluate, judge, and validate experience. U.K. analyst John Studley reminds us that:

> Knowledge is constituted by the ways in which people categorize, code, process and impute meaning to their experiences. This is as much true of 'scientific' as of 'non-scientific' everyday forms of knowledge. We should not therefore equate knowledge with some professional, specialized or esoteric set of data or ideas. It is something that everybody possesses, even though the grounds for belief and the procedures for validation of knowledge will vary […]. Knowledge […] is not an accumulation of facts but involves ways of construing the world.[679]

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[676] Fain, Barantovick, and Martin. "The Aims of Education in an Age of Stasis and Change." p. 8.
[677] Eagleton, Terry. *The Idea of Culture*, Oxford, U.K.: Blackwell Publishers, 2000. p. 67.
[678] Studley, John. *Dominant Knowledge Systems and Local Knowledge*, Mountain-Forum On-line Library Document, 1998; accessed January 2006; available from http://www.mtnforum.org/resources/library/stud98a2.htm.
[679] Ibid., accessed. p. 1.

In this sense, Indigenous knowledge systems and Western scientific-cultural knowledge systems, in their idealized forms, represent very different knowledge systems, which, nonetheless, are beginning to inform and influence each other.[680]

The term *Indigenous knowledge* (IK) is often used synonymously in the literature with *traditional knowledge* or *traditional ecological/ environmental knowledge* (TEK), and sometimes, with *local knowledge*. However, the term *Indigenous knowledge* is preferred here for several reasons. Local knowledge is characterized by knowledge of place, as is IK*,* but local knowledge tends more often to be directly influenced by Western worldviews than is IK, which is generally based on non-Western cultures. The term *traditional knowledge* often places an unwarranted emphasis on a body of "old data" transmitted unchanged between generations, while often ignoring the dynamic, "up-to-date" qualities of IK. Indigenous knowledge, on the other hand, encompasses knowledge of place and old knowledge, as well as knowledge of ecology, but goes well beyond all these more limited definitions, and incorporates modern, dynamic, and social elements.

Indigenous knowledge encompasses the diverse knowledge of traditional groups throughout the world, such as those in Australia, New Zealand, Africa, Asia, and Latin America, as well as the knowledge of Aboriginal or First Nations and Inuit peoples in Canadian and American contexts.[681] As such, IK represents a wide scope of knowledge that, nevertheless, has basic similarities among the diverse Indigenous systems.

According to George Sefa Dei, Chair of the Department of Sociology and Equity Studies in Education at the Ontario Institute for Studies in Education (OISE) at the University of Toronto, Indigenous knowledge is usually grounded in experience; is context-specific rather than universal; tends to include holistic social, philosophical, and spiritual values; and is generally relational or community-based and shared, rather than consumed as an individual product.[682] A balance between body, mind, heart, and spirit generally forms the core of Indigenous knowledge. It also tends to be concerned with sustainability, with linking the wisdom and welfare of past, present, and future generations, and with "embracing spiritual values, traditions, and practices reflecting connections to a higher order, to the culture, and to the earth."[683]

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[680] Ibid., accessed.

[681] Battiste, Marie. *Indigenous Knowledge and Pedagogy in First Nations Education: A Literature Review with Recommendations*, National Working Group on Education and the Minister of Indian Affairs, Indian and Northern Affairs Canada (INAC), 2002; accessed January 2006; available from http://www.ainc-inac.gc.ca/pr/pub/krw/ikp_e.html.

[682] Dei, George J. Sefa. *Rethinking the Role of Indigenous Knowledges in the Academy*, The Research Network on New Approaches to Lifelong Learning, Ontario Institute for Studies in Education/University of Toronto, NALL Working Paper 58, 2002; accessed November 2005; available from http://www.nall.ca/res/index.htm.

[683] Dei, George J. Sefa, Budd L. Hall, and Dorothy Goldin Rosenberg. "Introduction," in *Indigenous Knowledges in Global Contexts: Multiple Readings of Our World*, ed. Dei, G.J.S., B. Hall and D. Goldin-Rosenberg, 3-17. Toronto: University of Toronto Press, 1999. p. 6.

In a report for Indian and Northern Affairs Canada, Marie Battiste discusses the nature and framework of Indigenous knowledge and its contributions to Western educational reform.[684] In conducting a literature review of Indigenous knowledge, which she calls an "oxymoron," since much Indigenous knowledge is oral and embedded in the culture rather than written, Battiste defines IK as follows:

> Indigenous knowledge comprises the complex set of technologies developed and sustained by Indigenous civilizations. Often oral and symbolic, it is transmitted through the structure of Indigenous languages and passed on to the next generation through modeling, practice, and animation, rather than through the written word […]. Indigenous knowledge is typically embedded in the cumulative experiences and teachings of Indigenous peoples rather than in a library […]. Indigenous knowledge does not mirror classic Eurocentric orders of life. It is a knowledge system in its own right with its own internal consistency and ways of knowing, and there are limits to how far it can be comprehended from a Eurocentric point of view.[685]

New respect for IK points to its importance for learning holistic and interconnected ways of thinking, and for understanding attitudes necessary for ecological sustainability. Indigenous knowledge comes from generations of being in close contact with nature and, as such, is deeply rooted in local knowledge of the physical environment and of the local place where it originates.[686] The land tends to be extremely important to the identity and wellbeing of Indigenous peoples who view it both as medicine and as a source of strength.[687]

Frederico Mayor, the former Director-General of UNESCO, suggests that the challenge of sustainable development could be infused with values from Indigenous worldviews, and that spiritual values, specifically, could be helpful in finding new solutions to pressing world problems:

> Their world view, their values and their innate respect for nature and life represent potential contributions to the profound change in attitude and behaviour that can alone engender a global culture capable of acting responsively and responsibly in the face of global change […]. Such an ethic would temper humanity's acquired knowledge and power with wisdom of the kind found at the heart of the most

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[684] Battiste. *Indigenous Knowledge and Pedagogy in First Nations Education: A Literature Review with Recommendations*, accessed.

[685] Ibid., accessed. p. 2.

[686] Hunter, Anna. *Traditional and Western Systems of Knowledge*, Prince George, University of Saskatchewan, 2002; accessed January 2006; available from http://uarctic.org/bcs/BCS100/index.htm.

[687] Sable, Trudy. "Building the Fire: Preserving Local Knowledge and Traditions in the Face of Globalization," in *Gross National Happiness and Development: Proceedings of the First International Seminar on Operationalization of Gross National Happiness*, ed. Ura, Karma and Karma Galay, 680-687. Thimphu, Bhutan: The Centre for Bhutan Studies, 2004, accessed December 2005, available from http://www.bhutanstudies.org.bt/.

ancient human traditions and cultures—in Taoism and Zen, in the understandings of the Hopi and the Maya Indians, in the Vedas and Psalms, in the very origin of culture itself.[688]

In all these ways, Indigenous knowledge reflects and transmits values, content, methods, structures, and processes that differ radically from those of the conventional Western knowledge taught in schools. In that regard, consideration of the contribution of Indigenous knowledge, along with appropriate indicators, can potentially be very useful as a mirror for both the strengths and failings (including omissions) of conventional Western knowledge and for learning outcomes among the populace.

In this section, we look at Indigenous knowledge, specifically as it relates to values in comparison with dominant Western models, mainly from the Aboriginal/ Inuit perspectives in North America. In Chapter 19, Indigenous knowledge literacy, we look more closely at Traditional Ecological Knowledge (TEK) in the context of ecological literacy.

Again it is noteworthy that most conventional Western education curricula ignore the value, methods, and contribution of Indigenous knowledge, and focus largely on curricula based on Western cultural content (e.g., science literacy), and formal schooling outputs. In order to be inclusive and relevant to the development of a holistic Bhutanese education system based on GNH values, it might be useful to examine particular characteristics of Indigenous knowledge, including its strength and resilience in Canadian society today.

5.6.2 Caveats against false dichotomies and romantic views

Much effort has gone into highlighting the differences between Indigenous knowledge systems and Western scientific or Eurocentric worldviews by researchers in the field. This is an important step, not only in beginning to understand Indigenous knowledge, but also in beginning to understand the dominant approach and values of the Eurocentric worldview and their effect on both Indigenous and Western culture.

The following characterizations of and comparison between Indigenous and Western knowledge and values presents both in a somewhat idealized context in order to illuminate their basic worldviews. This does not mean that all Indigenous peoples, or all Western peoples, subscribe to the particular worldviews presented, or that each of the worldviews do not overlap.

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[688] Patel, Dhiru. *Social and Cultural Dimensions of Sustainable Development: Challenges and Opportunities*, Canadian Cultural Research Network, Department of Canadian Heritage, 1998; accessed November 2005; available from http://www.culturescope.ca/ev_en.php?ID=3471_201&ID2=DO_TOPIC. p. 12.

As Dei, et al. suggest, *it is important not to create a "false dichotomy of 'conventional / colonial / external' knowledge as bad, and 'Indigenous / marginalized / non-Western' knowledge as good."*[689] [emphasis added]

Glen Aikenhead of the University of Saskatchewan also warns of creating a "romantic" picture of Indigenous knowledge as forming utopian societies without problems, but he does find evidence that Indigenous knowledge tends to emphasize environmental responsibility.[690] Of course, there are examples of Indigenous people, such as the ancient people of Easter Island, who have not emphasized environmental responsibility. Indigenous people, as Battiste notes, also have been colonized and influenced by the powerful, Western, cultural context they have lived within for the past two centuries, and many are only beginning to rediscover the knowledge and values of their roots.[691]

As well, as in Western cultures, Indigenous societies contain people with different levels and areas of knowledge. Battiste underscores the point:

> [W]ithin any Indigenous nation or community, people vary greatly in what they know. There are not only differences between ordinary folks and experts, such as experienced knowledge keepers, healers, hunters, or ceremonialists, there are also major differences of experience and professional opinion among the knowledge holders and workers, as we should expect of any living, dynamic knowledge system that is continually responding to new phenomena and fresh insights.[692]

On the other hand, in Western contexts, Indigenous knowledge is often treated as "less worthy" than Western scientific knowledge. Fain, et al. note:

> Public schools, as state institutions, reproduce the existing culture through the formal and hidden curriculum. Education fosters legitimacy for certain forms of knowledge, especially abstract knowledge that detaches individuals from local place, and Western scientific knowledge […]. The fact that education reinforces the modern mind set, with appropriate values, norms and expectations related to consumption and production, and denigrates traditional knowledge as somehow less worthy, is considered by many ecologists and environmentalists as one of the biggest obstacles in the achievement of a universal education for sustainability.[693]

Recent thinking, however, focuses on comparing the two types of knowledge in order both to break through the dominant conception of Western knowledge as being the *only*

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[689] Dei, Hall, and Rosenberg. "Introduction." p. 4.
[690] Aikenhead. "Toward a First Nations Cross-Cultural Science and Technology Curriculum."
[691] Battiste. *Indigenous Knowledge and Pedagogy in First Nations Education: A Literature Review with Recommendations*, accessed.
[692] Ibid., accessed. p. 12.
[693] Fain, Barantovick, and Martin. "The Aims of Education in an Age of Stasis and Change." p. 5.

"valid" knowledge, and to respect Indigenous ways of knowing as legitimate, dynamic, continuous, complex, and as valid as Western knowledge. Dei argues:

> Students in particular are now questioning the devaluations, negations, and omissions that have long been embedded in schooling and school knowledge—for example, the near total absence of teachings on non-European knowledge forms. There is a recognition that educators and learners must start to offer multiple and collective readings of the world. This means exploring multiple and alternative knowledge forms.[694]

5.6.3 Government of Nunavut Inuit Qaujimajatuqangit

The new Canadian territory of Nunavut is working with elders to institutionalize a new organic way of knowing called *Inuit Qaujimajatuqangit* (IQ), which is based on traditional Inuit learning processes and values. IQ is often translated as traditional knowledge, but is conceived as a responsive, dynamic, and evolving work in progress that is defined by the Inuit themselves, rather than as a "fixed and diminishing product."[695] The Inuit IQ Task Force, which is working to include IQ in government policies and operations, defines IQ as "the Inuit ways of doing things: the past, present and future knowledge, experience and values of Inuit society."[696] It is interesting that these principles and values are also ones that could inform Canadian policies and values in general.

IQ provides guiding principles and a lens to evaluate whether government policies are culturally appropriate for the Inuit and to Inuit ways of knowing. These principles are based on traditional Inuit values, which are applied through IQ and which the Government of Nunavut's Department of Human Resources lists as follows:

- **Connection Values**—sharing, generosity, family, respect, love, listening, equality, significance and trust
- **Work Values—**volunteer, observe, practice, mastery, teamwork, cooperation, unity, consensus and conservation
- **Coping Values**—patience, endurance, improvisation, strength, adaptability, resilience, resourcefulness, moving forward, take the long view, survival, interconnectedness and honesty[697] [*sic*]

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[694] Dei, George J. Sefa. "African Development: The Relevance and Implications of 'Indigenousness'," in *Indigenous Knowledges in Global Contexts: Multiple Readings of Our World*, ed. Dei, G.J.S., B. Hall and D. Goldin-Rosenberg, 70-86. Toronto: University of Toronto Press, 1999. p. 70.

[695] Simpson, Larry. "An Inuit Way of Knowing and the Making of Nunavut," *Policy Options*, no. August, 2004: 9-12.

[696] Ibid. p. 10.

[697] Government of Nunavut Department of Human Resources. *Inuit Qaujimajatuqangit (IQ)*, 2005; accessed August 2006; available from http://www.gov.nu.ca/Nunavut/English/departments/HR/humanresources/site/beliefsystem.htm. p. 1.

The Department of Human Resources also lists the eight principles of IQ, and forms them as principles and goals of education. These are:

- *Inuuqatigiitsiarniq*—respecting others, relationships and caring for people. "Respect for others and treating others equally is a characteristic the elders have always stressed in their words of advice (*uqaujjuusiat*). Government practices should promote impartiality."[698]

- *Tunnganarniq*—fostering good spirit by being open, welcoming, and inclusive. "We must make the workplace people-friendly, welcoming and accepting for Nunavummiut, elders, our colleagues and others. Removing language and cultural barriers is important in welcoming people."[699]

- *Pijitsirniq*—serving and providing for family and / or community. "The concept of serving is central to the Inuit style of leadership as is the measure of the maturity and wisdom of an Inuk. Key here is the understanding that each person has a contribution to make and is a valued contributor to his / her community. Students will be expected to demonstrate this kind of leadership and commitment to serving the common good."[700]

- *Aajiiqatigiinniq*—decision making through discussion and consensus. "The concept of consensus decision-making relies on strong communication skills and a strong belief in shared goals. All students are expected to become contributing members of their community and to participate actively in building the strength of Inuit in Nunavut. Being able to think and act collaboratively, to assist with the development of shared understandings, to resolve conflict in consensus-building ways, and to consult respecting various perspectives and worldviews, are expectations that cross all curriculum areas."[701] "[D]ecisions will be made through seeking input from individuals, face to face meetings, direct communication, and consensus development. Inuit language will be widely used as the primary language of communication. Silence is part of communication, and it does not necessarily signify agreement."[702]

- *Pilimmaksarniq / Pijariuqsarniq*—development of skills through practice, effort and action. "The concept of skills and knowledge acquisition and capacity building is central to the success of Inuit in a harsh environment. Building personal capacity in Inuit

[698] Okalik, Premier Paul. *Pinasuaqtavut: 2004 - 2009*, Government of Nunavut, 2004; accessed August 2006; available from http://www.gov.nu.ca/Nunavut/pinasuaqtavut/engcover.pdf.
[699] Ibid., accessed.
[700] Government of Nunavut Department of Human Resources. *Inuit Qaujimajatuqangit (IQ)*, accessed.
[701] Ibid., accessed.
[702] Okalik. *Pinasuaqtavut: 2004 - 2009*, accessed.

ways of knowing and doing are key expectations for students. Demonstrating empowerment to lead a successful and productive life, that is respectful of all, is a powerful end goal of our educational system."[703]

"The workplace will be more accommodating and flexible in accommodating or making room for new ideas and practices that need to be implemented. Inuit staff must be given opportunities to develop skills on the job during regular hours through mechanisms such as mentoring, in-service training, and professional development."[704]

- *Piliriqatigiinniq / Ikajuqtigiinniq*—working together for a common cause. "The concept of developing collaborative relationships and working together for a common purpose. The essential Inuit belief that stresses the importance of the group over the individual should pervade all our teaching. Expectations for students will reflect working for the common good, collaboration, shared leadership and volunteerism. Piliriqatigiingniq also sets expectations for supportive behaviour development, strong relationship-building and consensus-building."[705]

- *Qanuqtuurniq*—being innovative and resourceful. "The concept of being resourceful to solve problems, through innovative and creative use of resources and demonstrating adaptability and flexibility in response to a rapidly changing world, are strengths all our students should develop. Resourcefulness should be demonstrated in all learning and also thinking that seeks to improve the context in which Inuit live."[706]

- *Avatittinnik Kamatsiarniq*—respect and care for the land, animals and the environment; environmental stewardship. "The concept of environmental stewardship stresses the key relationship Inuit have with their environment and with the world in which they live. Students will be expected to articulate respect for this mutually interdependent relationship and to demonstrate responsible behaviors that seek to improve and protect the relationship in ways that meet global challenges to environmental wellness."[707]

IQ forms the basis of the four major goals of the Nunavut government: healthy communities; simplicity and unity; self-reliance; and continuing learning.[708] Most government documents require statements regarding how IQ principles will be incorporated into plans and budgets. In addition to the government task force, an external

[703] Government of Nunavut Department of Human Resources. *Inuit Qaujimajatuqangit (IQ)*, accessed.
[704] Okalik. *Pinasuaqtavut: 2004 - 2009*, accessed.
[705] Government of Nunavut Department of Human Resources. *Inuit Qaujimajatuqangit (IQ)*, accessed.
[706] Ibid., accessed.
[707] Ibid., accessed.
[708] Okalik. *Pinasuaqtavut: 2004 - 2009*, accessed. p. 1.

council, the *Inuit Qaujimajatuqangit Katimajitt,* consisting of 11 members, provides advice to the government on IQ.

There also is an attempt to integrate IQ with what is known as Q2, *Qallunat Qaujimajatuqangi,* which is translated locally as "the white man's way of knowing and doing things." Simpson gives an example of the new *Nunavut Wildlife Act,* which was written in collaboration between the Inuit and Western-trained environmentalists. He argues that the Act is different from any other legislation in the world.[709] Although the IQ values come from traditional Inuit knowledge, they also resonate with Western notions of deep ecology:

> For example, the Act's IQ principle of *Pijitsirniq* means that a person with the power to make decisions must exercise that power to serve the people to whom he or she is responsible; *Avatimik Kamattiarniq* calls for nature to be treated holistically and with respect, as wildlife and habitat are interconnected and all actions have consequences, for good or ill; *Iliijaaqaqtailiniq* tells us that malice toward animals is prohibited and young harvesters should be taught to respect them; and *Papattiniq* is about guardianship and stewardship: wildlife belongs to nature and is not a commodity.[710]

This indicates clearly that Indigenous knowledge and learning outcomes can be highly relevant to current political and social needs and actions, and can be creatively integrated with Western science and education. In section 5.6.7 below, Table 11 contrasts Indigenous knowledge and Western scientific cultural knowledge. Although the table presents both types of knowledge in terms of contrasts, the Nunavut model demonstrates the potential for effective integration of these alternative knowledge systems at all levels.

5.6.4 Elders as sources of Indigenous knowledge transmission

Marlene Brant Castellano, who spent five years, from 1991 to 1996, as the co-director of research with the Canadian Royal Commission on Aboriginal Peoples, identifies three interrelated sources of Indigenous knowledge: traditional knowledge, which is passed between generations by elders; empirical knowledge, which is based on careful observations of natural, cultural, and social environments over time; and revealed knowledge, which is acquired through ancient processes of visions, dreams, and

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[709] The New Zealand Government also has legislation through their founding document, the "Treaty of Waitangi," to create a partnership with the Maori and to "be aware of and responsive" to Maori values and principles, and similar efforts have been made to incorporate Maori terms and concepts into legislation and government business. New Zealand Ministry of Education. *Consultation and Engagement with Maori. Guidelines for the Ministry of Education*, 1999; accessed August 2006; available from http://www.minedu.govt.nz/web/downloadable/dl5531_v1/consultationnet.doc.
[710] Simpson. "An Inuit Way of Knowing and the Making of Nunavut.", p. 12.

intuition.[711] "All of the senses," Castellano proposes, "coupled with openness to intuitive or spiritual insights, are required in order to plumb the depths of Aboriginal knowledge."[712]

The following is a brief discussion of the first and third of these sources of Indigenous knowledge described by Castellano—knowledge transmitted by elders, and revealed knowledge—which actually cannot be separated. We will discuss empirical knowledge or Traditional Ecological Knowledge in more detail in Chapter 18. It should be noted that this discussion on sources is key to identifying satisfactory indicators of the state of Indigenous knowledge: If the sources of this knowledge are protected, maintained, and actively used, then Indigenous knowledge outcomes are more likely to be healthy and strong.

Battiste notes that understanding knowledge empirically, based on experience, and normatively, based on social values, together form the basis of Aboriginal learning.[713] She observes that the major purposes of Indigenous education are to foster and maintain individual and community health and wholeness, and to bring out the inherent talents and capacities in a person. According to Battiste, many Indigenous peoples learn most often through working with elders—by "observing, listening, and participating with a minimum of intervention or instruction," and by asking few questions.[714] Córdoba explains:

> From our Aboriginal Elders we learn our histories, languages, traditions, cultures, arts, medicines, sciences, and how to survive; their stories and experiences teach us who we are, where we come from and guide us in visioning for the future […]. Our Elders have rich life experiences, many still speak their Aboriginal languages and remember stories and legends, traditions and life on the land; they preserve a rich history, while living and embodying Aboriginal knowledge.[715]

Elders are not teachers in the Western sense of lecturing or telling students what they should know. According to Wolff, elders often speak of learning but rarely teaching.[716] "Students" learn from experience while watching and emulating elders, and elders do not readily impart knowledge until the student is ready to receive and use it.

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[711] Castellano, Marlene Brant. "Updating Aboriginal Traditions of Knowledge," in *Indigenous Knowledges in Global Contexts: Multiple Readings of Our World*, ed. Dei, G.J.S., B. Hall and D. Goldin-Rosenberg, 21-36. Toronto: University of Toronto Press, 1999.

[712] Ibid. p. 29.

[713] Battiste. *Indigenous Knowledge and Pedagogy in First Nations Education: A Literature Review with Recommendations*, accessed.

[714] Ibid., accessed. p. 15.

[715] Córdoba, Tania. "Aboriginal Literacy and Education: A Wholistic Perspective That Embraces Intergenerational Knowledge." Paper presented at the First Nations, First Thoughts Conference, University of Edinburgh, Centre of Canadian Studies, May 5-6, 2005; accessed January 2006; available from http://www.cst.ed.ac.uk/2005conference/papers/Cordoba_paper.pdf. p. 2.

[716] Wolff, Robert. *Original Wisdom: Stories of an Ancient Way of Knowing*, Rochester, Vermont: Inner Traditions International, 2001.

To illustrate the personal nature of Indigenous knowledge, Castellano tells a story that "has been repeated often enough to have acquired a place in contemporary oral culture."[717] According to the story, an Elder from a northern Cree community was asked to testify about Cree lifeways and the environment at hearings concerning the first James Bay hydroelectric power development in northern Quebec. The Elder was asked to swear that he would tell the truth and he asked the translator for an explanation of the word. He then responded, "I can't promise to tell you the truth; I can only tell you what I know."[718] Whether knowledge is trusted or not is based on the integrity and perceptiveness of the speaker, rather than on claims of universal truth, as is the case in Western culture.

Brockman notes that elders are also protectors of Indigenous knowledge, and are careful about sharing information:

> The extent and nature of Traditional Knowledge loss can be overestimated for a variety of reasons. Elders may withhold information if research is conducted in culturally inappropriate ways or without community support and control. Some knowledge may only be appropriately shared with specific members of a society, or is kept secret from outsiders to help define group membership and loyalty. Knowledge is also withheld if there is concern about how it will be used; for example, information collected to support land claims may be sensitive if placed in the hands of government negotiators.[719]

Battiste strongly recommends that elders, knowledge keepers, and workers who are competent in Aboriginal languages and knowledge should be appreciated, remunerated, given the opportunity to teach or set up their own learning centres, and treated as "living educational treasures"[720] who have developed expertise through traditional education or self-learning. Battiste also highlights the broader value and potential contribution of these elders and their knowledge to an educated populace:

> These individuals comprise a functioning Aboriginal university based on Indigenous knowledge and pedagogy. Just how their experience can be adequately conveyed and nationally appreciated as expertise that should be included in education is the challenge.[721]

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[717] Castellano. "Updating Aboriginal Traditions of Knowledge." p. 25.

[718] Ibid. p. 25.

[719] Brockman, Aggie. *When All Peoples Have the Same Story, Humans Will Cease to Exist: Protecting and Conserving Traditional Knowledge: A Report for the Biodiversity Convention Office*, Dene Cultural Institute, 1997; accessed December 2005; available from http://www.nativemaps.org/abstracts/all_peoples.pdf.

[720] This term and concept is similar to the Japanese system of honouring and caring for holders of the cultural heritage, who are likewise called "National Living Treasures." See Azzarella, Dennis, and Aram Boyajian. "Living Treasures of Japan Video." National Geographic, 1988.

[721] Battiste. *Indigenous Knowledge and Pedagogy in First Nations Education: A Literature Review with Recommendations*, accessed. p. 21.

Ideally, from this perspective, the educated Canadian populace would know not only of the state of Indigenous knowledge in Canada per se, but of the degree and extent of its penetration into the larger Canadian society. While we have some information on the former, we do not yet have satisfactory knowledge of the latter, i.e., the extent to which Canadians at large have learned about, absorbed, and understood the basic principles and values of Indigenous knowledge, or the extent to which the role and work of Indigenous elders is adequately resourced, receives sufficient support, and is incorporated into mainstream educational curricula and learning systems.

5.6.5 Revealed / spiritual / intuitive sources of knowledge

Spirituality plays a major role in Indigenous knowledge, as Aikenhead reminds us in a quote from a Lakota Elder:

> This is not a scientific or technologic world. The world is first a world of spirituality. We must all come back to that spirituality. Then, after we have understood the role of spirituality in the world, maybe we can see what science and technology have to say.[722]

According to Jack D. Forbes, a member of the Delaware-Lenape tribe and Professor Emeritus and former Chair of Native American Studies at the University of California at Davis, the ultimate source of Indigenous knowledge is the "Great Spirit," which is ineffable and is spoken of and translated in many ways. For example, Forbes quotes Lakota medicine man Lame Deer, who says that the Great Spirit "is not like a human being […]. He is a power. That power could be in a cup of coffee. The Great Spirit is no old man with a beard."[723]

Knowledge in the Indigenous worldview consists of both sacred and secular dimensions, which are interconnected and not separated from each other. Therefore, one cannot talk about secular knowledge alone. Battiste notes this connection between Indigenous knowledge and spirituality:

> Knowledge is not secular. It is a process derived from creation, and as such, it has a sacred purpose. It is inherent in and connected to all of nature, to its creatures, and to human existence. Learning is viewed as a life-long responsibility that people assume to understand the world around them and to animate their personal

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[722] Simonelli, R. "Sustainable Science: A Look at Science through Historic Eyes and through the Eyes of Indigenous Peoples," *Bulletin of Science,Technology & Society*, vol. 14, 1994: 1-12. p. 11, cited in Aikenhead. "Toward a First Nations Cross-Cultural Science and Technology Curriculum." p. 221.
[723] Fire, John, Lame Deer, and Richard Erdoes. *Lame Deer, Seeker of Visions*, New York: Simon and Schuster, 1972. p. 39–40, cited in Forbes, Jack D. "Indigenous Americans: Spirituality and Ecos," *Daedalus: Proceedings of the American Academy of Arts and Sciences*, vol. 130, no. 4, 2001: 283-300. p. 283.

abilities. Knowledge teaches people how to be responsible for their own lives, develops their sense of relationship to others, and helps them model competent and respectful behaviour. Traditions, ceremonies, and daily observations are all integral parts of the learning process. They are spirit-connecting processes that enable the gifts, visions, and spirits to emerge in each person.[724]

Battiste's description is highly relevant to the kinds of definitions that are appropriate for wellbeing, and perhaps to a GNH-based education curriculum—both of learning outcomes and of the social outcomes they are intended to produce. Yet it is clear that these definitions go far beyond those adopted in most conventional Western educational structures, which do not acknowledge a spiritual dimension in learning processes.

There are many similar definitions of spirituality within the Indigenous context. As Cameron remarks, oral and empirical knowledge of the kinds practiced by Indigenous peoples are both accepted in Western (which he calls "minority") quantitative and qualitative practices. (He uses the word "minority" to indicate that Western culture comprises only a minority of the world's total population, while Indigenous cultures form the majority.) However, revealed or spiritual knowledge "does not fit within a minority paradigm."[725] "Consequently […] researchers need to engage with fourth world [Indigenous] paradigms."[726]

Dei notes that spiritual knowledge emphasizes sacredness, connectedness, wellbeing, love, compassion, humility, healing, wholeness, and peaceful co-existence among groups and with nature.[727] He presents an active definition of spirituality by Rahnema, who sees spirituality as encompassing:

> … sensitivity, the art of listening to the world at large and within one, from the hegemony of a conditioned 'me' constantly interfering in the process; the ability to relate to others and to act, without any pre-defined plan or ulterior motives; and the perennial qualities of love, compassion and goodness which are under constant assault in economized societies.[728]

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[724] Battiste. *Indigenous Knowledge and Pedagogy in First Nations Education: A Literature Review with Recommendations*, accessed. p. 14.

[725] Cameron, Graham. "Evidence in an Indigenous World." Paper presented at the Australasian Evaluation Society 2004 International Conference, Adelaide, South Australia, October 13-15, 2004; accessed January 2006; available from http://www.aes.asn.au/conference2004/TH11 Cameron, G.pdf. p. 3.

[726] Ibid. p. 5.

[727] Dei, George J. Sefa. *Spiritual Knowing and Transformative Learning*, The Research Network on New Approaches to Lifelong Learning, Ontario Institute for Studies in Education/University of Toronto, NALL Working Paper 59, 2002; accessed November 2005; available from http://www.nall.ca/res/59GeorgeDei.pdf.

[728] Rahnema, M. "Participation," in *Development Dictionary: A Guide to Knowledge as Power*, 116-131. London: Zed Books, 1995. p. 130, cited in Dei. *Spiritual Knowing and Transformative Learning*, accessed. p. 4.

Dei believes that teaching these universal values constitute spiritual education, and that emotions, intuition, and spiritual knowing are valid and effective ways of gaining knowledge.[729]

According to Darrell Posey of the Oxford Centre for the Environment, Ethics & Society at Oxford University, spirituality is not a system of organized religion.[730] Rather, at least in part, spirituality refers to a way of working and being with intangible energies and the essences or powers behind visible objects. The spiritual, he argues, is more powerful than the material.[731] Posey gives the following definition of spirituality as it relates to Indigenous knowledge and ways of knowing:

> Spirituality is the highest form of consciousness, and spiritual consciousness is the highest form of awareness. In this sense, a dimension of traditional knowledge is not local knowledge, but knowledge of the universal as expressed in the local. In Indigenous and local cultures, experts exist who are peculiarly aware of Nature's organizing principles, sometimes described as entities, spirits, or natural law. Thus, knowledge of the environment depends not only on the relationship between humans and Nature, but also between the visible world and the invisible spirit world.[732]

Psychologist Robert Wolff tells of his time spent living with the Aboriginal Sng'oi people of Malaysia, who lived in isolation far from civilization. His stories illustrate the *knowing* that comes from visions and from intuition. Wolff learned the Sng'oi language and became fascinated with how they knew what they did, which was not always connected with trial and error or with reason. He recalls:

> When I was with them I was moved by the strange synchronicities (C. G. Jung's term) that so often occurred. How was it possible that people without a telephone knew that I was coming to visit, when I did not know myself until a few hours before I left home? How could one person know what another was thinking and feeling and dreaming?[733]

Wolff eventually learned from the Sng'oi *how to know* intuitively. He learned to find water, directions, and medicinal plants that he had never seen before, but knew intuitively how they could help the situation he found himself in.

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[729] Dei. *Spiritual Knowing and Transformative Learning*, accessed.
[730] Posey, Darrell Addison. *The 'Balance Sheet' and the 'Sacred Balance': Valuing the Knowledge of Indigenous and Traditional Peoples*, Oxford, U.K., Oxford Centre for the Environment, Ethics & Society, University of Oxford, 1999; accessed January 2006; available from http://www.ubcic.bc.ca/Resources/conferences/kit.htm.
[731] Ibid., accessed.
[732] Ibid., accessed. p. 2.
[733] Wolff. *Original Wisdom: Stories of an Ancient Way of Knowing*. p. 4.

What this other sense is, I do not know. For me it is very real. I think of it as a sense of knowing. It probably is a quality we all have to a greater or lesser degree. For me it works when I can get out of my mind, when I can experience without having to understand, or name, or position, or judge, or categorize. It is a quality that has to be used or it fades away; just as one has to exercise muscles, so too knowing must be exercised.[734]

All who are in touch with the natural world can sense energies, emotions, and intentions of people and animals. If we listen, we can know—all we need to do is give up being in charge. *Knowing* inside is not something unusual; it is how we are. All humans can have that connection with All-That-Is. The connection is within us.[735]

If Wolff's statements are true, then it is clear that Indigenous knowledge in general, and its intuitive learning processes in particular, have direct relevance to all peoples—not just to the Indigenous peoples whose cultures more explicitly acknowledge the power of spiritual, revealed, and intuitive knowledge. As the educated populace curricula of Bhutan is further developed, it might be possible to include elements that reflect this intuitive dimension of learning, and that include its strength and prevalence in the educational processes.

In the West, and of course in the East, there are many anecdotal stories of leading figures who have acquired profound knowledge and understanding through "intuition". Einstein said that "the really valuable thing is intuition,"[736] and Philip Goldberg reiterates the point:

The list is long of people who awoke to new knowledge, had it delivered to them in a dream, or were seized by it as they lay about idly. Linus Pauling, for example, realized the shape of the protein molecule when, resting in bed, a string of paper dolls dangled from his hand in the shape of a helix.[737]

Western scientific and educational systems, which idealize rationalism and empiricism, however, have generally denigrated intuition as being "unscientific," and students are correspondingly taught not to trust their "unobjective" and "unreasonable" intuition. Goldberg, writing in 1983, saw the beginnings of change:

Intuition is increasingly recognized as a natural mental faculty, a key element in discovery, problem solving, and decision making, a generator of creative ideas, a

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[734] Ibid. p. 158.
[735] Ibid. p. 197.
[736] Goldberg, Philip. *The Intuitive Edge: Understanding Intuition and Applying It in Everyday Life*, Los Angeles: Jeremy P. Tarcher, Inc., 1983. p. 15.
[737] Ibid. p. 64.

forecaster, a revealer of truth. An important ingredient in what we call genius, it is also a subtle guide to daily living […].

The growth of cognitive research, theoretical advances in humanistic and transpersonal psychologies, provocative brain studies, the remarkable acceptance of Eastern philosophies and disciplines—such developments have led large numbers of people to believe that there is untapped power and wisdom within us […]. There is a growing conviction that perhaps we ought to trust the hunches, vague feelings, premonitions, and inarticulate signals we usually ignore.[738]

Sacredness in ordinary life

In Indigenous cultures, ritual, myth, vision, art, and learning the art of relationships in particular environments all embody opportunities for learning, and, as a consequence or outcome, can increase the sense of wholeness, wellbeing, and harmony with the world, both individually and collectively. Judith Burch writes that the Inuit people have an ancient tradition of placing large stone objects, Inuksuit,[739] arranged in the form of humans, in temporal and spiritual locations in the landscape as offerings to the spirits, and as guides for the people on the land. Among their practical functions, the Inuksuit are used as navigation and hunting aids, coordination points, indicators, and message centres.[740] Many of the Inuksuit that are still standing today were placed there long ago by Ancestors. These objects represent spiritual connections between the people and the land and, according to Córdoba, "demonstrate a unique method of learning to 'read the land' and to read the surrounding environment."[741]

As our people said, the Inuksuk has absorbed the peoples' spirit, fears, joy and anger […]. It becomes part of the earth and the rocks and so the people of many generations are part of that, the spirit of the rock, so that spot or that place is sacred.[742]

This sense of sacredness is infused throughout all elements of life for the Inuit. For example, Inuksuit also appear in legends and stories, art, ceremonies, string-game figures, and in winter-sky constellations.[743] They also are the focus of travelling songs passed down through the generations to help travellers remember a series of directions for long trips. Sadly, despite its central role in the transmission of Indigenous knowledge, this direct, revelatory mode of learning forms no explicit or acknowledged part of most conventional learning systems or indicators.

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[738] Ibid. pp. 15,16.
[739] Inuksuit is the plural of Inuksuk.
[740] Burch, Judith Varney. *Arctic Inuit Art: Culture*, Judith Burch website, 2005; accessed January 2006; available from http://www.arcticinuitart.com/culture/inuk.html.
[741] Córdoba. "Aboriginal Literacy and Education: A Wholistic Perspective That Embraces Intergenerational Knowledge." p. 4.
[742] Ibid. p. 4.
[743] Burch. *Arctic Inuit Art: Culture*, accessed.

Learning is also transmitted by Indigenous peoples through theories, philosophies, and histories, and told through talking or sharing circles, stories, ceremonies, symbols, and artworks. Battiste notes: "The long-term ecological history of the land is a cloth woven from the threads of stories and ceremonies provided by many different members of the community."[744] Córdoba reports how one First Nations person describes storytelling as a fundamental way of educating and transmitting knowledge:

> That's how we do the teachings through storytelling and legends, and that was our way our kids learned; that was teaching. The right way and the wrong way you could learn though the legends for thousands of years, you didn't have to have degrees or anything. So we learned a whole lot about life through storytelling and legends and it's important that we still continue that process because more so now kids are having tremendous difficulties in school.[745] [*sic*]

Dancing, singing, and celebrations are also important sources of knowledge. According to Forbes, they are ways to express gratitude, "a feeling of overwhelming love and thankfulness for the gifts of the Creator and the earth/ universe."[746] They reflect interconnects between the people, the earth, and spirit through the similarities in their patterns, which can be seen when a broad view of experience is taken.[747] The following example from Trudy Sable describes this interconnection in the Mi'kmaq Snake Dance in Nova Scotia—a traditional way of transmitting knowledge to children:

> This dance is yet another teaching of respect for the powers at play, some of which can kill you, such as picking the wrong medicine. It also teaches of the seasons, the directions, the stars, the nature of reptiles, the bird that leads one to the medicine, and values of respect and care needed in collecting plants. Offerings to the four directions were made in the dance, acknowledging the gift of medicine. Properly approaching the medicine will be good and strengthen the people. From the study of one dance or one plant, a whole web of relationships and information about the world come into being.[748]

Thus, it is necessary here to acknowledge the importance of this key spiritual and intuitive component of learning and knowledge, and to recommend efforts to broaden the scope of GNH curriculum and education system to include it.

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[744] Battiste. *Indigenous Knowledge and Pedagogy in First Nations Education: A Literature Review with Recommendations*, accessed. p. 19

[745] Córdoba. "Aboriginal Literacy and Education: A Wholistic Perspective That Embraces Intergenerational Knowledge." p. 3.

[746] Forbes. "Indigenous Americans: Spirituality and Ecos." p. 285.

[747] Hayward. *Letters to Vanessa: On Love, Science, Awareness in an Enchanted World*.

[748] Sable, Trudy. "Another Look in the Mirror," M.A. thesis, Saint Mary's University, 1996. cited in Hayward. *Letters to Vanessa: On Love, Science, Awareness in an Enchanted World*. pp. 195–196.

5.6.6 Relevance of Indigenous knowledge within Eurocentric frameworks

Many analysts have noted that Indigenous knowledge systems have much to teach Western culture about sustainability, understanding, knowledge, learning, and survival in general.[749] Peter Steeves of DePaul University warns that our "age of information" should not be equated with an "age of understanding."[750] If our technological underpinnings were to malfunction, he argues, chaos would ensue and most people in the Western world would not know how to survive. He suggests that we may actually know less, and less about things relevant to daily life, than our predecessors. He quotes an elder of the Six Nations who, in 1744, questioned the relevance of Western education for his people. When the College of William and Mary offered to take a dozen "Indians" and educate them "properly," the elder responded:

> We know that you highly esteem the kind of learning taught in colleges […] but you, who are wise, must know that different Nations have different conceptions of things; and you will therefore not take it amiss, if our Ideas of this kind of education happen not to be the same with yours. We have had some experience of it. Several of our young people were formerly brought up at the colleges […] but when they came back to us they were bad runners, ignorant of every means of living in the woods, unable to bear either cold or hunger […] spoke our language imperfectly […] . They were totally good for nothing. We are, however, not the less obliged by your kind offer, though we decline accepting it; and to show our grateful sense of it, if the Gentlemen of Virginia will send us a dozen of their sons, we will take care of their education; instruct them in all we know, and make men of them.[751]

John Studley asserts that Indigenous peoples throughout the world have generated vast bodies of knowledge whose application is highly relevant today:

> An IKS [Indigenous knowledge system] provides the basis for local-level decision making in all the areas of contemporary life including community-based tourism, agriculture, nutrition, food preparation, health, natural resource management, education, and community and social organization. This body of knowledge consists of dynamic insights, and techniques gained through processes of trial and error in response to changing environmental and socio-economic circumstances and opportunities. These knowledge systems are usually embedded in naturalistic epistemologies and belief systems, which differ radically from those of scientific systems.[752]

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[749] Dei, Hall, and Rosenberg. "Introduction."
[750] Steeves, H. Peter. *Trading Knowledge for Information*, Chicago, Conscious Choice, 2001; accessed June 2005; available from http://www.consciouschoice.com/2001/cc1402/tradingknowledge1402.html.
[751] Ibid., accessed.
[752] Studley. *Dominant Knowledge Systems and Local Knowledge*, accessed. p. 4.

A recent UNESCO report by Jerome Bindé argues that standardization is a risk of modern "knowledge societies," and that the "information revolution and the global economy of knowledge seem to be condoning the hegemony of [one system]." Bindé emphasizes: "The scientific and technological determinants of the information society seem scarcely conducive to promoting that 'fruitful diversity of the cultures' that UNESCO is mandated to preserve."[753] Indeed, as Fain, et al. maintain, the phrase "work to live" as opposed to the more Western phrase "live to work" goes a long way in explaining the different worldviews of the Indigenous and Western mindsets."[754]

Studley notes that the fundamental tenets of the Western worldview

> … have been challenged for being sexist, ethnocentric, anti-ecological, and ignorant of the cultural dimension of technological development […]. [However,] the contemporary ecological movement, particularly deep ecology, ecofeminism, bioregionalism, the Gaia hypothesis and the concept of sustainable development appear to have some resonance with Indigenous knowledge.[755]

Studley explains that the Western worldview has remained basically unchanged in the general population since Descartes and others formulated it in the sixteenth and seventeenth centuries. With new findings in relativity theory and quantum theory, however, physicists have become aware that the Cartesian worldview no longer fits with the findings of their studies. As a result, they have needed to question and rework their views. Avant garde elements in other disciplines, such as art, music, philosophy, and social theory have used the new findings to search for new paradigms. Studley suggests that this trend may spread to other disciplines:

> Many other disciplines, especially those most influenced by the Cartesian worldview (biology, medical science, psychology, psychotherapy, economics, science, 'scientific forestry' and development studies) have now reached the limit of their worldview and will seemingly need to adopt an alternative paradigm to be consistent with modern physics […]. There is an apparent need for them to transcend the classical models, to go beyond mechanistic and reductionist paradigms and embrace holistic and ecological paradigms.[756]

Battiste recommended in 2002 to the National Working Group on Education for Indian and Northern Affairs Canada that an innovative Canadian education system would blend

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[753] Bindé, Jerome. "Local and Indigenous Knowledge, Linguisty Diversity and Knowledge Societies," in *Towards Knowledge Societies*, 147-157. Paris: UNESCO, acessed November 2005; available from http://www.unesco.org/en/worldreport, 2005http://www.unesco.org/en/worldreport.

[754] Fain, Barantovick, and Martin. "The Aims of Education in an Age of Stasis and Change."

[755] Studley. *Dominant Knowledge Systems and Local Knowledge*, accessed. p. 6.

[756] Ibid., accessed. p. 3.

Indigenous epistemology and pedagogy with the Euro-Canadian system. The challenge she sees is "not just reducing the distance between Eurocentric thinking and Aboriginal ways of knowing but engaging decolonized minds and hearts."[757] Another challenge, she argues, is for Aboriginal peoples to find the courage to live what they believe. Battiste eloquently describes how Aboriginal people hope to transform education, which appears to be in line with GNH principles and values:

> This quest for wholeness, authenticity, and spirituality is embedded in the educational reforms urged by Indigenous knowledge. Indigenous knowledge presents several goals for educational reform: acknowledging the sacredness of life and experiences; generating the spirit of hope based on experience as a connection with others in creating a new and equitable future; generating the meaning of work as a vocation and as a mission in life; and developing the capacity to do everything to open a new cognitive space in which a community can discover itself and affirm its heritage and knowledge in order to flourish for everyone. In the dynamics of Indigenous knowledge, purposeful, meaningful lives are dignified and spiritual. This is what we strive for and hope that educational reform will help us achieve.[758]

Battiste considers the difficulties of trying to place Indigenous knowledge within Eurocentric frameworks and disciplines. She explains that Eurocentric scholars generally have taken three main approaches to IK, which limit IK to either:

1. taxonomic and static categories that remain unchanged over time
2. quantifiably observable empirical elements
3. relevance based only on its specific spiritual value to its population, which excludes relevance to other populations.[759]

According to Battiste, these approaches reduce the significance of IK to its empirical content, and do not explain its holistic nature.

Battiste also suggests that when Indigenous knowledge is taught in Western educational systems, it is taught rationally and as part of a particular academic discipline (if at all). However, Indigenous knowledge needs to be transmitted through experience and context, and therefore, cannot be suitably comprehended by Western students in strictly academic settings.

Elizabeth McIsaac agrees that knowledge arising from a vision of sacredness, notions of the people being part of the land and of all creation, and the view of love as the main organizing principle for relations with the natural and social world, are generally placed

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[757] Battiste. *Indigenous Knowledge and Pedagogy in First Nations Education: A Literature Review with Recommendations*, accessed. p. 22.
[758] Ibid., accessed. pp. 29–30.
[759] Ibid., accessed.

within philosophical frameworks in Western worldviews and are therefore not properly learned or understood in Western cultures and educational systems.[760]

These critiques of Western educational systems by Battiste and McIsaac and others may be important to consider in developing a GNH-based education curricula in Bhutan. It may also be important to consider the extent that the Indigenous knowledge of Bhutanese people is included in the curriculum and whether learning outcomes and social outcomes actually reflect the values transmitted in this knowledge.

Rolf Jucker, from the University of Wales, Swansea recently evaluated the implicit and explicit attitudes to science and technology in UNESCO's Education for Sustainability program, Teaching and Learning for a Sustainable Future: A Multimedia Teacher Education Programme (TLSF), and found that the Indigenous perspective is largely missing.[761] His example illustrates the problem of attempting to include the Indigenous perspective, while at the same time not questioning Western assumptions. In Jucker's view:

> [A]ny serious notion of sustainability needs to stress the limitations of the Earth and the social justice dimensions, which immediately excludes a misuse of the term to justify business as usual and Western-style overdevelopment and overconsumption […]. [W]e need most of all a very thorough critical evaluation of and reflection on science and any technological application that flow [*sic*] from it within a sustainability framework, because science and technology are, at present, such a dominant driving force for unsustainability.[762]

Jucker argues that the UNESCO Education for Sustainability program does not assess or reflect upon the approach of science and technology, or properly incorporate the insights of Indigenous knowledge: "[T]he outcome is that there is a very uncritical implicit endorsement of Western science […] reinforcing uncritically popular myths about progress, development, and superiority and advancement of Western science."[763] Jucker gives an example from Module 2 of TLSF, "Understanding sustainable development":

> This module provides us with a typical example of what happens if we do not apply a whole-systems approach as needed for sustainability. The Earth Charter is

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[760] McIsaac, Elizabeth. "Oral Narratives as a Site of Resistance: Indigenous Knowledge, Colonialism, and Western Discourse," in *Indigenous Knowledges in Global Contexts: Multiple Readings of Our World*, ed. Dei, G.J.S., B. Hall and D. Goldin-Rosenberg, 89-101. Toronto: University of Toronto Press, 1999. p. 99.

[761] Jucker, Rolf. "UNESCO's Teaching and Learning for a Sustainable Future: A Critical Evaluation of Underlying Unsustainable Progress Myths," *The Trumpeter*, vol. 19, no. 2, 2003: 83-107.
, United Nations Educational Scientific and Cultural Organization (UNESCO). *Teaching and Learning for a Sustainable Future: A Multimedia Teacher Education Programme. Version 3.0*, UNESCO, 2002; accessed November 2005; available from http://www.unesco.org/education/tlsf/index.htm.

[762] Jucker. "UNESCO's Teaching and Learning for a Sustainable Future: A Critical Evaluation of Underlying Unsustainable Progress Myths." pp. 85, 90.

[763] Ibid. p. 91.

used as exemplary teaching material. In it, right next to each other, two courses of action are advocated: (1) 'Support international scientific and technical cooperation on sustainability, with special attention to the needs of developing nations'; and (2) 'Recognise and preserve the traditional knowledge and spiritual wisdom in all cultures that contribute to environmental protection and human wellbeing.' There is no realisation that the two are, at least in recent history, mutually exclusive. The worldwide spread of the Western scientific worldview is the best known recipe to eradicate completely traditional knowledge and spiritual wisdom. In other words, Western 'progress' will destroy what remains of local knowledge and will thereby undermine the South's capacities for self-sufficiency. This point is particularly pertinent, because TLSF itself advocates, in module 11, that we need to preserve and revitalize Indigenous knowledge if we want to become more sustainable.[764]

As Castellano notes:

> Traditional knowledge of how to maintain balance in our lives, how to relate to other human beings, and how to practice respect for the Earth, which supports us, is desperately needed […]. The ultimate test of the validity of knowledge is whether it enhances the capacity of people to live well […]. The validity of new formulations of old wisdom can best be tested in the crucible of everyday life.[765]

5.6.7 Comparison of Indigenous and Western knowledge systems and worldviews

One approach to analyzing worldviews and processing knowledge, according to Studley, is through identifying and describing cognitive maps or filters, which "categorize the world of experience into classes of phenomena which eliminate the necessity of responding to every unique event in the environment."[766] As seen in Table 11, these maps, which represent integral elements of every worldview, can be ontological (self-oriented), epistemological (knowledge-related) or cosmological (relating to the universe).

Table 11 represents a combination of characterizations from two reports, written by Studley and by Aikenhead, and illustrates the basic, extreme differences in worldviews between the *ideal* Indigenous and Western scientific cultural approaches to knowledge.[767] Both Aikenhead and Studley, in turn, compiled the information from a number of sources, which, Studley comments, are representative of the literature: Aikenhead gives 14 sources for his information and Studley lists 26 sources.

Aikenhead introduces the information he presents with a warning that "a romanticized

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[764] Ibid. p. 93.
[765] Castellano. "Updating Aboriginal Traditions of Knowledge." p. 33.
[766] Studley. *Dominant Knowledge Systems and Local Knowledge*, accessed.
[767] Aikenhead. "Toward a First Nations Cross-Cultural Science and Technology Curriculum." pp. 220–221.

version of a First Nations peaceful coexistence with the environment should be avoided":[768]

> I shall adopt a recently developed cultural perspective on science education that treats Western science as a subculture of Euro-American culture […]. A cultural perspective on science education views teaching as cultural transmission and views learning as culture acquisition, where culture means 'an ordered system of meaning and symbols, in terms of which social interaction takes place' (Geertz, 1973, p. 5[769]). We talk about, for example, a Western culture, and Aboriginals speak of their First Nations cultures, because members of each group share, in general, a system of meaning and symbols for the purpose of social interaction. Geertz's definition is given more specificity by anthropologists Phelan, Davidson, and Cao (1991)[770] who conceptualize culture as the norms, values, beliefs, expectations, and conventional actions of a group[…].
>
> Scientists share a well-defined system of norms, values, beliefs, expectations, and conventional action—the culture of Western science or 'the subculture of science.' These norms, values, etc., vary with individual scientists and situations and have been investigated by scholars in a field called 'social studies of science.' Their descriptions of the subculture of science often include [a list of] attributes […].This list does not define subculture science but identifies some of its aspects described by the social studies of science literature. Because science tends to be a Western cultural icon of prestige, power, and progress, its subculture permeates the culture of those who engage it. This acculturation can threaten Indigenous cultures.[771]

Some of the information in Table 11 is deliberately redundant in order to point to the reality that there are various contexts for information and knowledge about the world that overlap and that these categories are by no means rigid or exclusive.

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[768] Ibid.

[769] Geertz, C. *The Interpretation of Culture*, New York: Basic Books, 1973.

[770] Phelan, P., A. Davidson, and H. Cao. "Students' Multiple Worlds: Negotiating the Boundaries of Family, Peer, and School Cultures," *Anthropology and Education Quarterly*, vol. 22, 1991: 224–250.

[771] Aikenhead. "Toward a First Nations Cross-Cultural Science and Technology Curriculum." pp. 218–220.

Table 11. Contrasts between Indigenous knowledge systems and Western scientific–cultural knowledge systems

Contrasting areas	Indigenous knowledge systems	Western scientific-cultural knowledge systems
Common identifying terms found in the social science literature (from Aikenhead)	"thematic, survival-oriented, holistic, empirical, rational, contextualized, specific, communal, ideological, spiritual, inclusive, co-operative, co-existent, personal"	"mechanistic, materialistic, reductionist, empirical, rational, decontextualized, mathematically idealized, ideological, […] competitive, […] impersonal"
General perspective (from Aikenhead)	"holistic perspectives including [being] accommodating, intuitive, and [relying on] spiritual wisdom"	"reductionist perspective including […] mechanistic and analytical explanations"
Epistemology (from Studley)		
General perspective	"the power of nature through observation of […] interweaving patterns and by attending to nature's voices; exploration of the inner world of all existence"	"the power of reason applied to natural observation; exploration of the outer world of physical existence"
Means of knowledge acquisition	"generated through observations and experiments of uses, and by identification with the object of knowledge"	"learned in abstract manner, not always linked to application, and based on the separation of the observer from the object of knowledge"
Basis of cognition	"intuitive and subjective"	"analytical and objective"
Process of knowledge transmission	"usually recorded and transmitted orally, sometimes via sacred texts"	"transmitted deductively through written word"
Integration with worldview and culture	"holistic, subjective, experiential, embedded, and integrated in the social, cultural, and moral dimension"	"reductionist, objective, positivist, disembedded, compartmentalized"
Knowledge sources (both are not static) (from Aikenhead)	"the immediate world of personal and tribal experiences: one's	"the physical universe is knowable through rational empirical means"

Contrasting areas	Indigenous knowledge systems	Western scientific-cultural knowledge systems
	perceptions, thoughts, and memories which include one's shared experiences with others; and the spiritual world evidenced through dreams, visions, and signs which are often interpreted with the aid of medicine men or Elders"	
Social goals (from Aikenhead)	"survival of a people"	"gaining knowledge for the sake of knowledge and for power over nature"
Intellectual goals (from Aikenhead)	"to coexist with mystery in nature by celebrating mystery"	"to eradicate mystery by explaining it"
Association with human action (from Aikenhead)	"intimately and subjectively interrelated"	"formally and objectively decontextualized"
Cosmology (the universe) (from Studley)		
View of life forces	"views all matter as having life force, including inanimate forms—Animistic"	"recognizes only plants and animals as having life force"
Perception of nature and life forms	"ecological-based on worldviews which emphasise social and spiritual relations between life forms"	"hierarchically organized and vertically compartmentalized—the environment is [composed of] conceptually discrete components"
Explanation of environmental phenomena	"spiritual explanations of environmental phenomena, revised and validated over time"	"explanations derived through testing of hypotheses, using theories and laws of nature"
Basis of relationship with nature	"shaped by the ecological system in which it is located"	"predicated on people's ability to dominate nature"
Nature of knowledge as a "good"	"a finite 'good'"	"infinite 'good'"
Equality between life forms	"stresses inter-dependency and equality of all life forms"	"sees humans […] as superior life form, with an inherent right to control and exploit nature"
Ontology (self)		

Contrasting areas	Indigenous knowledge systems	Western scientific-cultural knowledge systems
(from Studley)		
Basis of self worth	"predicated on group values"	"predicated on individualistic values"
Context (from Studley)		
Dealing with change over time—phenomenological	"based on a long time series in one locality"	"based on short time series over a large area"
Time measurement	"time is measured cyclically"	"time is linear"
Contextual validity	"bound by time and space, social contextuality, and moral factors"	"superior on the basis of universal validity"
Geographic contextuality	"requires a commitment to the local context"	"values mobility and weakens local context"
Accountability (from Studley)		
Social accountability	"associated with a system of social accountability"	"not usually associated with a system of social accountability"

Sources: Adapted from Aikenhead, Glenn S. "Toward a First Nations Cross-Cultural Science and Technology Curriculum." *Science Education*, 81, no. 2 (1997): 217-38, pp. 220-221; and Studley, John. "Dominant Knowledge Systems and Local Knowledge," Mountain-Forum On-line Library Document, 1998; accessed January 2006, available from http://www.mtnforum.org/resources/library/stud98a2.htm.

These approaches are much more than different *ideas*. Rather, they represent different ways of thinking about and finding meaning in the world, and they form the basis of actual action in the representative groups. As Studley notes: "When we compare modern and Indigenous communities we are not seemingly just dealing with different political affiliations but different systems of knowledge, different ways of understanding, perceiving, experiencing and of defining reality."[772]

Again, it is essential to recognise that one of our key purposes here in delineating the contrasts that are shown in the Table above is to highlight some of the limitations of conventional Western education systems, and to point to learning processes and outcomes whose potential is currently not realised in these systems, but could be realized within a GNH-based system. These learning outcomes may also produce important social outcomes, while their absence can have adverse consequences for the wellbeing of both current and future generations of Bhutanese. For these reasons, we consider it vitally important to develop curricula that account for the presence and impact of aspects of Bhutanese Indigenous knowledge that resonate with those shown above, in a way that

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[772] Studley. *Dominant Knowledge Systems and Local Knowledge*, accessed. p. 4.

relates to the goal of incorporating GNH principles and values into Bhutanese education curricula.

Studley observes that the elements shown in the Table are not mutually exclusive for either system—Indigenous knowledge or Western scientific knowledge:

> The elements (and sub-elements) within these knowledge systems are generalizations and represent polar opposites at either end of an epistemological continuum […]. Dominance of one element within a cultural group does not prevent many individuals in that same group from being highly functional in another element. Social change is occurring in both modern and Indigenous societies such that new values and ways of thinking are emerging in both."[773]

Studley also makes the following distinctions:

> Some Western scientists are sceptical of Indigenous knowledge due to possible erosion, lack of sufficient intergenerational transmission and the assimilation of many Indigenous peoples into modern cultures. There is no doubt that much erosion of Indigenous knowledge has occurred, however many believe in the vitality of Indigenous cultures and their ability to evolve.

In the same way "modern" culture is considered to valid even though it has evolved and new worldviews and paradigms have been adopted […]. As a result, Western science is becoming increasingly interdisciplinary in response to today's globally interconnected world, in which biological, psychological, and social phenomena are recognized as belonging to interdependent systems. Neither Indigenous nor modern knowledge systems should be judged according to a rigid set of generalizations or a static image of the past. Knowledge systems are dynamic and constantly changing through the assimilation of 'outside' knowledge and alternative paradigms and worldviews. Both modern and Indigenous knowledge systems have their strengths and limitations in addressing resource management and both are now inseparably interlinked.[774]

Based on the contrasts described above, it is clear that Indigenous knowledge is important not only to Indigenous peoples, but that it has a key role and function in offering a type of learning and education that is not conventionally provided, and that may be a vital complement to Western science-based learning structures. Although Table 11 presents Indigenous knowledge and Western science in terms of contrasts for heuristic purposes, the Nunavut model mentioned above shows that effective integration of these forms is possible and potentially highly productive. The above contrasts also indicate that the values, methods, approach, and relation to the natural world that Indigenous knowledge transmits are crucial to satisfactory social outcomes, wellbeing, and sustainability. As such, Indigenous knowledge can have an important place in education curricula.

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[773] Ibid., accessed. p. 4.
[774] Ibid., accessed. section 1.8.

PART III

CONTEXT 1:

LEARNING ENVIRONMENTS

6. Lifelong and Lifewide Learning

6.1 Characteristics of lifelong and lifewide learning

6.1.1 Definitions

Lifelong and lifewide learning have become important concepts and practices in the global community that are rapidly changing the way education is viewed. Basically, lifelong learning refers to learning that does not stop with formal education, but continues throughout the individual's lifetime. Lifewide learning refers to the fact that learning takes place in nonformal and informal modes in many settings other than schools and universities.[775] This distinction is not always made in the literature. The term, "lifelong learning," is used more often in the literature than "lifewide" learning, and it generally includes the concepts of lifewide learning.

Although the social and personal benefits of lifelong and lifewide learning are recognized, today the terms are mainly connected with the economic paradigm of the "knowledge society," which describes changes in the labour market toward knowledge-intensive jobs, and which has also been accompanied by shifts towards more short-term, unstable jobs, growing self-employment, and more participation of women in the workforce.[776] These workplace trends as well as technological changes call for the continual upgrading of skills, knowledge, and attitudes through self-directed and workplace learning over the life course.

The UNESCO Institute for Education began work related to "lifelong education" as an organizing principle of education in the late 1960s. The original conception of the term came from a more holistic, social view, rather than an economic one. This view was that education should:

- be more holistic and inclusive than that received in schooling alone
- not be restricted to the formal education system
- be universal rather than elite
- as the ultimate goal of lifelong education, improve the quality of life.[777]

One of the first comprehensive definitions came a few years later:

> **Lifelong education** is a process of accomplishing personal, social and professional development throughout the life-span of individuals in order to

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[775] Colardyn, and Bjornavold. "Validation of Formal, Non-Formal and Informal Learning: Policy and Practices in E.U. Member States."

[776] Pannozzo, and Colman. *Working Time and the Future of Work in Canada: A Nova Scotia GPI Case Study*, accessed.

[777] Tuijnman, and Bostrom. "Changing Notions of Lifelong Education and Lifelong Learning."

enhance the quality of life of both individuals and their collectives. It is a comprehensive and unifying idea, which includes formal, non-formal and informal learning for acquiring and enhancing enlightenment so as to attain the fullest possible development in different stages and domains of life.[778]

Around the same time, Philip Coombs and Manzoor Ahmed offered definitions of the horizontal, or "lifewide dimension of education," which includes formal, nonformal, and informal learning:

> **Formal education** [schooling]: the highly institutionalised, chronologically graded and hierarchically structured 'education system,' spanning lower primary school and the upper reaches of the university.

> **Nonformal education**: any organised, systematic, educational activity carried on outside the formal system to provide selected types of learning to particular subgroups in the population, adults as well as children.

> **Informal education**: the lifelong process by which every person acquires and accumulates knowledge, skills, attitudes and insights from daily experiences and exposure to the environment—at home, at work, at play; from the example and the attitudes of the family and friends; from travel, reading newspapers and books or by listening to the radio or viewing films or television.[779]

Bernt Gustavsson of Linköping University in Sweden notes that, with the OECD taking the lead, a radical redefinition of the central concepts of lifelong/ lifewide education began to occur in the mid-1980s with the development of new information technologies:[780]

> The humanistic and democratic vocabulary, which had earlier dominated the rhetoric in educational politics, came to be transformed into an economic vocabulary. Catch-words like 'active citizens,' 'responsible people,' 'collaboration' and 'social care,' were replaced by 'efficiency,' 'quality,' 'competence,' 'goal-direction,' and 'evaluation.'[781]

Education indicators that strive to incorporate lifelong and lifewide learning should ideally reflect the broader original definitions of these terms, rather than only the narrower and later usages and interpretations that are common today.

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[778] Dave, R. H., ed. *Foundations of Lifelong Education*. Hamburg and Oxford, UNESCO Institute for Education and Pergamon Press, 1976.
[779] Coombs, and Ahmed. *Attacking Rural Poverty: How Nonformal Education Can Help*.
[780] Gustavsson. "What Do We Mean by Lifelong Learning and Knowledge."
[781] Ibid., p. 14

6.1.2 Quality education

The UN has also introduced the concept of quality education into its goals and targets, although they recognize that there is a debate about what a quality education is. The UNESCO Ministerial Round Table on Quality Education holds that:

> Quality has become a dynamic concept that has constantly to adapt to a world whose societies are undergoing profound social and economic transformation. Encouragement for future-oriented thinking and anticipation is gaining importance. Old notions of quality are no longer enough […] despite the different contexts there are many common elements in the pursuit of a quality education, which should equip all people, women and men, to be fully participating members of their own communities and also citizens of the world.[782]

UNESCO goes on to define what it considers these essential common characteristics of a quality education, which resonate with an education based on GNH principles:

Quality education:
- supports a rights-based approach to all educational endeavours. Education is a human right, and therefore quality education supports all of the human rights;
- is based on the four pillars of Education for All—learning to know, learning to do, learning to live together and with others, and learning to be;
- views the learner as an individual, a family member, community member, and a global citizen and educates to create individual competency in all four roles;
- upholds and conveys the ideals of a sustainable world—a world that is just, equitable, and peaceable, in which individuals care for the environment to contribute to intergenerational equity;
- takes into consideration the social, economic, and environmental contexts of a particular place and shapes the curriculum or programme to reflect these unique conditions. Quality education is locally relevant and culturally appropriate;
- is informed by the past (e.g. indigenous and traditional knowledge), is relevant to the present, and prepares individuals for the future;
- builds knowledge, life skills, perspectives, attitudes and values;
- provides the tools to transform current societies to more sustainable societies;
- is measurable. [783]

Gustavsson notes that "social competence" has been added to the goals of lifelong learning as it was increasingly recognized that the economic goals had become too

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[782] United Nations Educational Scientific and Cultural Organization (UNESCO). *Ministerial Round Table Meeting on "Quality Education"*, UNESCO General Conference, 32nd session, 29 September-17 October, 2003; accessed March 2005; available from http://portal.unesco.org/en/ev.php-URL_ID=15505&URL_DO=DO_TOPIC&URL_SECTION=201.html. p. 1.

[783] United Nations Educational Scientific and Cultural Organization (UNESCO). *Education for Sustainable Development: United Nations Decade (2005-2014)*, accessed. p. 1.

narrow. However, this may be problematic as it is commonly defined, for it often means "social flexibility[:] elastic people adaptable to existing institutions, structures and systems. Troublesome and critical people are ruled out."[784] There is a general awareness, however, that lifelong learning can produce social benefits that are important to the quality of life and societal wellbeing.[785] For example, the OECD report, "Lifelong Learning for All," describes the essence of a learning culture as being "to foster personal development, including the use of time outside work; to strengthen democratic values, to cultivate community life; to maintain social cohesion; to promote innovation, productivity and economic growth."[786]

However, Jan Visser, President of the Learning Development Institute (LDI) in the U.S. and former UNESCO Director of Learning without Frontiers, proposes that when we look beyond the idea of learning as a consequence of instruction to the more broadly defined idea of learning as a lifelong process that occurs in multiple settings, we find that we actually know very little about human learning.[787] To address this lack of knowledge, the LDI has initiated a new multidisciplinary program called the *Book of Problems (or what we don't know about learning.)*[788] The *Book of Problems* (BOP) initiative was created to map what is not known about learning. It reflects "a variety of fields and issues, ranging from such diverse areas as brain science to belief systems, and how these impact […] our understanding of learning."[789] The BOP "constitutes a discovery journey into the unknown with partial answers leading to further and more complex questions."[790] This is a long journey and it starts with asking questions.

6.1.3 Measurement difficulties and information needs

Albert Tuijnman and Ann-Kristin Boström, of Stockholm University, have been working within the economic paradigm on possible methods to measure the impact of lifelong learning on societies.[791] Noting that "lack of information of various kinds is the root

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[784] Gustavsson. "What Do We Mean by Lifelong Learning and Knowledge."

[785] McMahon. "Conceptual Framework for the Analysis of the Social Benefits of Lifelong Learning."

[786] Organisation for Economic Co-operation and Development (OECD). *Lifelong Learning for All*. cited in MacNeil. *Lifelong Learning as Public Policy in Canada*, accessed.

[787] Visser, Jan, and Muriel Visser. *Talking About the Unknown*, The Learning Development Institute, 2003; accessed May 2005; available from http://www.learndev.org/dl/TalkingAboutTheUnknown.pdf.

[788] Visser, Jan. "Book of Problems." Presidential Workshops and Interactive Discussion Sessions at the International Conferences of the Association for Educational Communications and Technology, Dallas,Texas and Anaheim, California, November 12-16, 2002, and October 22-25, 2003, 2003, The Learning Development Institute; accessed May 2005; available from http://www.learndev.org/BOP-AECT2002.html. The title of the initiative was inspired by an early 20th century group of Polish mathematicians who met regularly in a café to discuss the unsolved problems of their discipline. They collected the results of their discussions in a handwritten book they kept at the café and added to regularly.

[789] Visser, Jan, Muriel Visser, and Ron Burnett. "A Cornucopia of Problems," *Tech Trends*, vol. 48, no. 2, 2004: 70-72.

[790] Visser. "Book of Problems."

[791] Tuijnman, and Bostrom. "Changing Notions of Lifelong Education and Lifelong Learning."

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cause of market failure," Tuijnman is particularly concerned that governments have the information necessary to improve the knowledge base of society through better investments and training choices.[792]

Since lifelong learning is not tied to institutions, Tuijnman advises that evaluations need to take a large, holistic perspective:

> The information infrastructure for lifelong learning needs to be diverse, yet inclusive: it needs to comprise comparable indicators not only of the contexts, inputs, processes and multiple outcomes of formal education as well as informal learning in the life span, but the information also needs to be presented at several levels of aggregation. Pre-schooling, tertiary education for young adults and senior citizens, on-the-job training as well as informal learning at home and in the community, whether undertaken for investment or consumption purposes, all need to have their proper place in the information system […].
>
> The demand is for administrative and institutionally based statistics, national accounting data, survey-derived measures of adult learning, as well as longitudinal surveys of living conditions and time and money spent on various learning activities […]. Multiple indicators organised in a multilevel framework— and hence multiple information sources—are required for the monitoring of progress towards the implementation of life-long learning for all.[793]

Tuijnman presents some of the difficulties in measuring lifelong learning. He argues that the most important information gap is the lack of data on multiple learning outcomes. Problems in identifying outcomes include the time lag between investments in education and lifelong learning opportunities on the one hand, and outcomes in the economic and social sectors—such as increased productivity, economic growth, and social cohesion— on the other. Tuijnman also suggests that the new role for government is to move away from being the sole provider of education resources, curriculum, and standards certification toward one of acting in a steering capacity and providing legal frameworks: "[t]o be able to steer in this new role government will need access to information not hitherto supplied by the statistical system."[794]

Tuijnman notes that proxy variables such as number of years of schooling or highest educational credential, most often used in lieu of direct observation of learning outcomes, skills, and competencies, do not give policy makers or employers an accurate assessment of the knowledge and skills of the potential workforce. Individuals who have the same

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[792] Tuijnman, Albert. "Measuring the Impact of the New Economy on Education Sector Outputs." Paper presented at the "Official Statistics and the New Economy" Conference, London, August 27 - 29, 2002, Institute of International Education, Stockholm University; accessed March 2005; available from http://www.statistics.gov.uk/iaoslondon2002/contributed_papers/IP_Tuijnman.asp.
[793] Ibid.
[794] Ibid.

credentials do not all have the same knowledge or skills, and learning does not stop with the credential. Knowledge and skills acquired outside the formal learning network are not reflected in conventional measures of educational attainment, and it is often impossible to distinguish learning activities from other activities. In addition, the specific skill requirements of jobs change over time and are difficult to determine and measure. This can result in a mismatch between the skills needed in the economy and the actual skills embedded in the population.

The most important information needs and challenges for data development suggested by Tuijnman include the following:

- More accurate, direct measurement of the knowledge, skills, and attitudes of the populace
- Better data about the nature and distribution of essential work skills in the population
- New measurement instruments to measure nonformal learning at work and informal learning in daily life to be combined with a labour force or household survey approach to data collection
- A survey of worker knowledge, skills, and learning within firms
- Longitudinal approach to data collection to reflect the cumulative process of lifelong learning[795]

6.1.4 Lifelong learning initiatives

Western nations are a long way from developing a comprehensive lifelong learning strategies, although the intention to do so has been expressed in numerous initiatives.[796] In Canada, for example, work on developing lifelong learning initiatives, including policy, strategy, and research, is taking many directions, mainly through the areas of adult education and labour force development. Several initiatives are concerned with assessment, and seek to include both nonformal and informal learning within a "learning culture." We will look at some of these initiatives in the following sections on nonformal and informal learning.

A survey of human resource development interest groups in Canada, conducted by Human Resources and Development in 1990, found over 40 federal government agencies, departments, board and councils, and over 200 nongovernmental interest groups, involved in education, training, and learning.[797] However, today many of these

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[795] Ibid.

[796] MacNeil. *Lifelong Learning as Public Policy in Canada*, accessed.

[797] Barker, Kathryn. "Lifelong Learning in Canada: Visions for the Future." Paper presented at the Conference on Lifelong Learning. Seventh International Seminar: Social Development and Human Resources Development in the APEC Member Economies, Tokyo, 1998, Human Resources Development Canada.

nongovernmental organizations have lost their core funding and are no longer operating. For example, with the newly restructured Human Resources and Social Development Canada (HRSDC), new criteria have made "cross-sectoral councils" ineligible for infrastructure funding. As one consequence, the Canadian Alliance of Education and Training Organizations (CAETO), a lifelong learning network that included education and training communities in Canada, closed operations on May 31, 2005.

One of the key government agencies "dedicated to establishing a culture of lifelong learning for Canadians" is HRSDC itself.[798] In part, HRSDC is working on methods to assess prior learning through Prior Learning Assessment and Recognition (PLAR), which helps individuals develop portfolios and relates experience to formal credentialing procedures. HRSDC also is working to identify essential skills needed for knowledge work, to promote technology use in learning, and to encourage workplace learning.[799]

Telecommunications-based and similar learning initiatives are led by Industry Canada through programs such as SchoolNet, Computers for Schools Program, the National Graduate Register, and the Community Access Program.[800] The Status of Women Canada has developed a gender-based analysis assessment model, which is vital for all aspects of lifelong learning, to assess inclusion of gender issues in policies, learning initiatives, workplace learning, access to learning, and so forth.[801]

An important element in the development of a learning culture is the establishment of partners across jurisdictions. Organizations are now including multiple partners in their work. Nongovernmental organizations that promote lifelong learning in Canada include the Research Network to New Approaches to Lifelong Learning (NALL)[802] and the Work and Lifelong Learning Research Network (WALL).[803] Located at the Centre for the Study of Education and Work (CSEW) at the Ontario Institute for Studies in Education (OISE) at the University of Toronto, NALL and WALL are two phases of a research program funded by the Social Sciences and Humanities Research Council (SSHRC). This is part of a larger program that saw SSHRC create five large-scale research networks in education and training across the country involving more than 140 researchers from

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[798] Human Resources and Social Development Canada (HRSDC). *Website*, accessed January 2005; available from http://www.hrsdc.gc.ca/en/home.shtml.
[799] Ibid., accessed.
[800] Industry Canada. *Website*, accessed January 2005; available from http://www.ic.gc.ca/cmb/welcomeic.nsf/icPages/Menu-e.
[801] Status of Women Canada. *Website*, accessed January 2005; available from http://www.swc-cfc.gc.ca/resources/gba_e.html.
[802] Research Network on New Approaches to Lifelong Learning (NALL). *Website*, Ontario Institute for Studies in Education (OISE), University of Toronto, accessed January 2005; available from http://www.oise.utoronto.ca/depts/sese/csew/nall/index.htm.
[803] Livingstone, David. *Exploring the Changing Nature of Work and Lifelong Learning: Preliminary Findings of a Canadian National Survey*, Toronto, WALL Working paper 5, The Research Network on the Changing Nature of Work and Lifelong Learning (WALL), The Centre for the Study of Education and Work (CSEW) at the Ontario Institute for Studies in Education (OISE), University of Toronto, 2004; accessed January 2005; available from http://www.wallnetwork.ca/index.html.

Canadian universities, and 150 community organizations and private sector companies, along with provincial and school board representatives. In the first phase of the program SSHRC invested $5.6 million dollars.

In phase one of the SSHRC program, which included NALL, funding covered the period 1996–2001. NALL produced over 70 research reports, many concerned with informal learning. It also conducted the first national informal learning survey. In phase two, WALL received funding for 2002–2006. In 2003, in collaboration with the Institute for Social Research at York University, WALL produced the "National Survey of Learning and Work," and, between 2003–2004, completed interviews with 9,000 Canadian adults from coast to coast. The 28-page questionnaire is available on the WALL website, which describes the survey as follows:

> The survey documents paid and unpaid work conditions over the past five years and will generate the first systematic empirical assessments of changing work conditions in relation to the full array of adult learning practices, schooling, further education courses, informal training, non-taught informal learning. It will also provide profiles of workers' perceptions of changes in key dimensions of paid and unpaid work. Evidence generated by our survey work will provide specific insights into the extent and rate of emergence of a 'new economy,' as well as the impact of such changes on adult learning activities. Our survey will also serve to validate the 1998 NALL survey [on informal learning], permit the first national trend inferences about changes in patterns of informal learning, supplement the narrower conventional surveys of education and employment with much greater attention to informal learning and unpaid work, and provide fuller understanding of the general dynamics of change in learning and work relations.[804]

In addition, WALL is conducting 12 case studies that will examine learning within work contexts. These studies have surveys linked to the national survey in the following work contexts: biotechnology, steel / light manufacturing / nursing homes, public sector work, the teaching profession, disabled bank workers, female information technology workers, immigrant workers, housework, volunteer community workers, school-work youth transition, critical transitions through the life course, and labour education programs.[805] We discuss NALL and WALL in more detail in Chapter 8, Informal Learning.

On the international level, there are standard surveys administered to students through the OECD, such as the Programme for International Student Assessment (PISA), which we discuss below, and the International Adult Literacy and Skills Survey (IALSS),[806] which is the Canadian component of the Adult Literacy and Life Skills Program (ALL) and which we discuss in Chapter 16, Adult Basic Literacy. ALL is a "large-scale co-operative

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[804] Ibid., accessed.
[805] Ibid., accessed.
[806] Formerly the International Adult Literacy Survey (IALS).

effort undertaken by governments, national statistical agencies, research institutions and multi-lateral agencies that provides internationally comparable measures."[807] All of these surveys were developed in tandem with Statistics Canada and are now the main instruments for the direct measurement of lifelong learning skills.[808] The European Union is also developing a European Labour Force Survey (ELFS) based on the IALSS that will collect data on adult learning and continuing vocational training. The ELFS will also collect data on "several social, economic, and labour market outcomes" of adult learning.[809]

6.2 The basis of lifelong / lifewide learning: knowledge and practical wisdom

6.2.1 Forms of knowledge: episteme, techne, and phronesis: expert knowledge, practical or technological knowledge, and practical wisdom

It is important that education curricula incorporate an awareness of the approaches and views of knowledge they implicitly embody, and the different forms of knowledge that exist. Again, such distinctions are rarely made in conventional Western education systems, but suggestions have called for these systems to strive to make forms of knowledge explicit.

As noted above, UNESCO's definition of quality education includes building "knowledge, life skills, perspectives, attitudes and values," and providing "the tools to transform current societies to more sustainable societies." Different types of knowledge are connected to practical activity and have different uses—whether it be reading a book or building a spacecraft.[810] Thinking is also an activity, and knowledge is related to what we think as well as what we do. Educational indicators also need to take these different types of knowledge into account.

Gustavsson discusses the Aristotelian origins of three different types of knowledge: *episteme, techne* and *phronesis*.[811] *Episteme* is basically expert knowledge that can be used to serve human and planetary wellbeing. In the past, this type of knowledge has been considered objective and permanent. Expert knowledge is embodied in professionals who have mastered the fundamentals of their particular specialization. For example, without expert knowledge, to give an example from Bellinger et al., an individual would not recognize the pattern, *Abugt dbesbt regtc uatn s uitrzt*, as a translation of one of

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[807] Statistics Canada. *About the Pan-Canadian Educational Indicators Program*, accessed. p. 12
[808] Tuijnman. "Measuring the Impact of the New Economy on Education Sector Outputs."
[809] Ibid.
[810] Gustavsson. "What Do We Mean by Lifelong Learning and Knowledge."
[811] Ibid.

Newton's three laws of motion.[812] Society has a place both for expert and for lay, or common sense, knowledge, and both belong to society as a system.

According to Richard Fox, expert "knowledge may be defined in terms of the publicly communicated and constructed bodies of knowledge that make up academic disciplines, databases, books, theories, works of art and other cultural products."[813] This list includes data and information as well as the knowledge of experts. Fox maintains that this expert body of knowledge is an important foundation for:

> … solving our problems […] with reference to higher-level, longer-term values, purposes or hypotheses […]. To some extent, getting deeper into any subject depends on developing a rich database of relevant information on knowing one's way around a topic, of having ready knowledge and skill available when it is required.[814]

Episteme, expert knowledge, is accompanied by *techne* and *phronesis,* which both describe different kinds of actions. *Techne*, or practical, technical knowledge, is a means to an end since it is needed for production and creation. According to Gustavsson, it is a technical tool or the "instrumentalization" of knowledge. In the technical area, we may ask questions like: what happens to craftsmanship when trades are computerized and formalized? This is also the area educators and business managers are talking about when they refer to the need for "skill development." Problem-based learning and problem-solving in general are also considered as *techne*, since the focus is on knowledge as an instrumental means to an end.

Phronesis, also known as normative knowledge, value-based knowledge, or practical wisdom, is linked to political and ethical action and is an end in itself and the purpose of action. In the normative area we may ask questions like: what happens to natural resources when material gain is valued over ecosystem sustainability? Gustavsson suggests that *phronesis* is the central form of knowledge. Without practical wisdom, expert and technical knowledge are not sustainable, since "this efficiency and concentration on ends-means rationality kicks back on the system as the life-world withers away."[815] This situation is seen today in a myriad of social, economic, and environmental problems. Practical wisdom, in this context, is knowledge whose purpose is wellbeing, a good quality of life, and all that this implies. In this case, knowledge is not knowledge *for* wellbeing. It is knowledge *as* wellbeing.

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[812] Bellinger, Castro, and Mills. *Data, Information, Knowledge, and Wisdom*, accessed.
[813] Fox, Richard. "Constructivism Examined," *Oxford Review of Education*, vol. 27, no. 1, 2001: 23-35.
[814] Ibid.
[815] Gustavsson. "What Do We Mean by Lifelong Learning and Knowledge."

6.2.2 Importance of practical wisdom

Since it involves the whole of life, practical wisdom cannot be reduced to single actions. We must first "train our ability of discernment."[816] Problems in society are complex, interdependent, uncertain, unpredictable, and changing at a rapid speed. According to Gustavsson, these problems can be traced, in part, to information- and biological-technology—both of which the average person knows very little about.[817] If we define a positive outcome as something that is beneficial to the wellbeing and sustainability of the planet in all its multidimensional forms, then we must be able to know what is beneficial and what is not. Often this is clear—we can know without being an expert that the air is polluted when we see deposited soot and have trouble breathing. But in the overlapping, "fuzzy" areas, we need knowledge based on practical wisdom, such as the value of sustainability, for practical guidance.

Unfortunately, examples of expert knowledge used in ways that are unaccompanied by practical wisdom are seen far too often in their contribution to social upheavals and environmental degradation. Robert Sternberg, professor of psychology and education at Yale University and director of its Center for the Psychology of Abilities, Competencies, and Expertise, writes often of the need to teach students to think wisely. In his book, *Why Smart People Can be so Stupid,* he notes that some of the most highly educated people have been responsible for global catastrophes.[818]

According to Sternberg, increased academic skills may be important, but students also need the ability to use knowledge for beneficial purposes and the common good. In fact, Sternberg says directly: "People are wise to the extent that they use their intelligence to seek a common good."[819] He says that the goal of his Center is not to teach values but to help students develop positive values of their own that promote social welfare. Students' self-interests need to be balanced with larger interests of community, country, and the world.

Sternberg also notes that being wise also includes humility: "Teaching for wisdom means helping students to know what they know, but also to know what they do not know, and even, at a given point of time, cannot know."[820]

It would be useful if this perspective of education *for* wellbeing, as expressed by Sternberg, or knowledge *as* wellbeing, as Gustavsson characterizes it, were incorporated into domain frameworks, structures, and curriculum selection of education systems,

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[816] Ibid.
[817] Ibid.
[818] Sternberg, ed. *Why Smart People Can Be So Stupid.*
[819] Ibid.
[820] Ibid.

including that of Bhutan. Sadly, few conventional educational systems incorporate this perspective or distinguish between individual success—as generally measured by standardized test results and graduation rates—and societal wellbeing, or the use of education to create social benefit.

6.2.3 Empiricist view of knowledge

The empiricist view of knowledge is a form of expert knowledge that gained prominence in the West in the seventeenth and eighteenth centuries in the study of the natural sciences. Knowledge was seen as a description of the world's structure and functions.[821] According to the scientific method, knowledge was supposedly built up from observations and experiments that led to generalizations and universal laws.[822] New research in physics, neuroscience and cognitive development has widely criticized this approach. However, it remains a dominant thread in contemporary education.[823] The empiricist or "positivist" view is that knowledge is an association of ideas that come from external reality, is a mirror of nature, and can be used to gain mastery of external reality. Knowledge is seen as a representation in the mind of objective reality.[824] It is consistent with this view that the mind is sometimes viewed as a vessel into which knowledge can be poured, and that the accumulations of factual knowledge in the mind can then be evaluated through standardized tests.

6.2.4 Constructivist view of knowledge

New research into the brain sees it as "a complex, highly adaptive, self-organizing system" which uses new information to search for patterns and meaning within past experience, and, thus, actively "constructs" new knowledge.[825] In this case, knowledge is the construction of meaning or understanding as new experiences are assimilated within our existing store of knowledge. Going beyond the empiricist approach, this view recognizes the importance of experiential, "project-based", and "service" learning, of diverse learning styles, and of the social context in which learning takes place. In the constructivist view, the learning process becomes highlighted rather than the accumulation of knowledge. In this view, it is more important to speak of "learning" rather than of "being educated."

Richard Fox, in a critical analysis of constructivism, says that this view currently appears to dominate the educational literature.[826] In the constructivist view:

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[821] Gustavsson. "What Do We Mean by Lifelong Learning and Knowledge."
[822] Golinski, Jan. *Making Natural Knowledge: Constructivism and the History of Science, 2nd Edition*, Chicago: University of Chicago Press, 2005.
[823] Capra. *Ecoliteracy: The Challenge for Education in the Next Century*, accessed.
[824] Golinski. *Making Natural Knowledge: Constructivism and the History of Science, 2nd Edition*.
[825] Capra. *Ecoliteracy: The Challenge for Education in the Next Century*, accessed.
[826] Fox. "Constructivism Examined."

Truth as objective correspondence to an independent reality simply does not exist […]. We always perceive and know the world from some sociocultural, and historically situated, point of view. Hence, human knowledge is always to be seen as a 'construct', a product of the human mind.[827]

Golinski elaborates:

Stories of the long-term incremental progress of accumulating knowledge, under the aegis of the scientific method, no longer command general acceptance […]. 'Constructivism' [sums up] the outlook shared by the sociologists of science […]. [It] draws attention to the central notion that scientific knowledge is a human creation, made with available material and cultural resources, rather than simply the revelation of a natural order that is pre-given and independent of human action.[828]

In other words, as Dawes explains in discussing the work of Alfred Korzybski:

Whatever we (as individuals) hear, see, touch, smell, etc., is not all that could be heard, seen, etc., not the only way to listen, look, etc. Whatever we say, think, imagine, believe, understand, etc., is not all that could be said, imagined, understood, etc. There are other things that could be said: other ways to say what we said, and so on.

Whatever we know is not all that can be known. But there are limits to what we can know. Since there are limits to what we can see, hear, feel, etc.[, w]e don't know what anything 'means'. We assign our own meanings to what we hear, see, believe, know, etc. Words do not have meanings. We give our own meanings to words. Whatever we know must not be considered elementalistically as absolute knowledge, but as a subject-object-subject relationship. The 'known' is not something 'out there', but an awareness of the results of interactions between 'whatever is going on out there—and whatever has been going on, and is going on in us.' (So we need to be attentive to what we are now thinking, feeling, doing etc., since our presents influence our futures).[829]

This understanding, according to Dawes, is a call to become more "conscious of our abstracting" and to become more aware of the world around us. It is to note that what we

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[827] Ibid.
[828] Golinski. *Making Natural Knowledge: Constructivism and the History of Science, 2nd Edition*.
[829] Korzybski, Alfred. *Science and Sanity an Introduction to Non-Aristotelian Systems and General Semantics*, Fort Worth, Texas: Institute of General Semantics (original publication), 1933. cited in Dawes, Milton. *Down to Earth Epistemology*, International Society for the Systems Sciences (ISSS) and International Institute for Systemic Inquiry and Integration (IISII), 1995; accessed January 2005; available from http://www.newciv.org/ISSS_Primer/seminar.html.

call "knowledge" is a product of our inquiries and interests, and that knowledge exists in the larger mind of our societies.[830]

6.2.5 Individual and societal levels of knowledge

In the research on educational methods and forms, knowledge is approached from both the individual and the societal levels, which researchers now recognize to be interconnected.[831] As Fox notes: "The individual and the social are mutually constructed and co-existing levels of analysis and indeed life."[832] The individual, in part, is a product of his or her culture and, as such, has a distinctive point of view based on that culture's previous knowledge and values. This implies that knowledge and wisdom are also embodied in our social fabric by institutions, societies, and cultures, not just in individuals.[833]

Golinsky emphasizes that the importance of the constructivist view of knowledge is that it puts knowledge within the context of the social values and attitudes of the prevailing culture:

> 'Constructivism' […] is more like a methodological orientation than a set of philosophical principles; it directs attention systematically to the role of human beings, as social actors, in the making of scientific knowledge [… . S]ocial collectivity, ignored in the classical model of subject and object, has come to be regarded as critical for the production of knowledge.[834]

In the West, socially constructed knowledge includes types of knowledge, such as traditional and local knowledge, as well as the predominant Western, scientific approach to knowledge.[835] New understanding is also producing new trends in knowledge production. The production of expert knowledge, previously considered the territory of universities, now includes a range of settings such as industrial laboratories, think tanks, and governmental and nongovernmental research centres.[836] As well, concerns about fragmented bodies of knowledge and increased specialization have led practitioners of different disciplines to work more closely together to create multidisciplinary understandings that go beyond the ability of single individuals to produce knowledge.

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[830] Dawes. *Down to Earth Epistemology*, accessed.
[831] Fox. "Constructivism Examined."
[832] Ibid.
[833] Maxwell. "Two Great Problems of Learning."
[834] Golinski. *Making Natural Knowledge: Constructivism and the History of Science, 2nd Edition*.
[835] Folke, Carl. "Traditional Knowledge in Social-Ecological Systems," *Ecology and Society*, vol. 9, no. 3, 2004.
[836] de Weert, Egbert. "Contours of the Emergent Knowledge Society: Theoretical Debate and Implications for Higher Education Research," *Higher Education*, vol. 38, 1999: 49-69.

In addition, information has become more accessible to the general public through formal education, the Internet, and various forms of media. The extent to which the public understands issues concerning the environment, food, health, science, economy, and politics, for instance, can be a measure of societal knowledge, as can the extent to which lifelong learning has become important within society.[837] In all these ways, therefore, knowledge can be both a social construct and embodied within social institutions, as much as an individual construct held by individuals.

6.3 Characteristics of lifelong learners

As discussed above, the learning focus in the West today is shifting from "education as schooling" to "learning over the life course." This is more than adding value to education. It marks a new direction in thinking about education. Tuijnman and Bostrom remark that this is significant, since the focus and responsibility is shifted from structures and institutions to the self-direction and responsibility of learners who need the motivation and ability to manage their own learning.[838] In this scenario, the most important factor is that learners need to know *how* to learn.

This new focus shifts the emphasis from being knowledge- and information-based, in the sense that the learner is "filled up" with information by educators, to being skills- and values-based, requiring knowledge of how to think and analyze.[839] Knowledge is not something accumulated in the student's mind. It is now seen as externalized, shared, and produced by collaborative and collective effort.[840]

Gerhard Fischer, of the University of Colorado, suggests that this change of perspective indicates a change of mindset that needs to be evaluated through an assessment of motivation, interest level, and participation in communities of learners, and that these assessments should be combined with techniques for long-term longitudinal assessment. He sums up the change in perspective:

> A lifelong learning perspective requires that we change mindsets. This will include, for example, that we see and understand breakdowns and symmetry of ignorance as opportunities rather than as things to be avoided; that teachers understand their roles not only as truth-tellers and oracles, but as coaches, facilitators, and mentors; and that knowledge is not presented as a commodity to

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[837] Delanty, Gerard. "Ideologies of the Knowledge Society and the Cultural Contradictions of Higher Education," *Policy Futures in Education*, vol. 1, no. 1, 2003.

[838] Tuijnman, and Bostrom. "Changing Notions of Lifelong Education and Lifelong Learning."

[839] Longworth. *Lifelong Learning in Action: Transforming Education in the 21st Century.*

[840] Fischer. *Lifelong Learning: Changing Mindsets*, accessed.

be acquired or delivered, but as a human struggle to understand and as a source to deal with personally meaningful problems.[841]

In order to understand the characteristics of lifelong learners, we next look at learners' conceptions of knowledge and learning processes, the styles they employ in learning, and the self-regulation skills needed to direct their own learning. Following this discussion, we focus on assessment methods and tools that have been used to measure self-regulated learning.

6.3.1 Learner conceptions of knowledge and learning

As noted, the ability to be a lifelong learner is considered to be an important outcome of schooling, and, as such, is an important ability for students to learn. This ability involves personal conceptions of knowledge and learning, which then influence personal approaches to learning, or learning styles.

In a discussion of learning strategies, or how learners "learn to learn," Noel Entwistle, of the University of Edinburgh, and Elizabeth Peterson, of the University of Auckland, argue that it is important to distinguish between a shared understanding of a "concept," and an individual's personal response to a concept. They identify this response as being the individual's "conception" of learning.[842]

> The formal definition [of learning] indicates a relatively stable change in behaviour or thinking, but that does not take account of the different processes that are used in learning across a variety of tasks and situations or the personal, affective component which becomes attached to concepts such as learning. Here, for clarity, we make a distinction between a shared understanding of a 'concept' and an individual's personal and therefore variable response to a concept—their 'conception'.[843]

Figure 22 below, reproduced from Noel Entwistle and Elizabeth Peterson[844], illustrates the research consensus on conceptions of knowledge and learning processes. Entwistle and Peterson note that as students "learn to learn" throughout their schooling, their understanding of knowledge generally progresses to include an expanding awareness of the nature of knowledge, which can lead to personal transformation. This progression is not uniform or linear, however, since students hold different views for differing periods of time and may at any stage "suspend, nullify, or reverse the growth process."

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[841] Ibid., accessed., p. 11.
[842] Entwistle, Noel J., and Elizabeth R. Peterson. "Conceptions of Learning and Knowledge in Higher Education: Relationships with Study Behaviour and Influences of Learning Environments," *International Journal of Educational Research*, vol. 41, 2004: 407-428.
[843] Ibid. p. 408.
[844] Ibid.

Entwhistle and Peterson note that in 1970, U.S. educator William Perry was the first to identify this progression, which is now widely accepted:

> [Perry] described […] views which are typically clustered into four sequential groups or stages, ranging from a certainty that all knowledge is either right or wrong (dualism), to acknowledgement that there are many ways of looking at a situation (multiplicity), to a realisation that views rest on interpretations from objective evidence with a variety of possible conclusions being drawn (relativism), and leading, eventually, to a readiness to make a personal stand on issues, while accepting that all knowledge and ideas are ultimately relative (commitment within relativism).[845]

Entwistle and Peterson note that subsequent research has added conceptions of learning that parallel those of the conceptions of knowledge. In addition, researchers have found a clear linkage in learners between conceptions of learning and their approaches to, or cognitive processes of, learning, which has had a major influence on learners' understanding of how to learn. Ference Marton, et al., describe learning as having six stages, which move from a surface level of learning to a deep level of learning.[846] Entwistle and Peterson argue that this distinction between surface and deep levels of processing learning is "probably the most influential of the concepts" that describe learning.

As illustrated in Figure 22 below, the first two stages of learning, called "reproducing," involve rote accumulation of separate "pieces" of knowledge, acquired from a teacher or other source, usually through memorization. A qualitative change happens at the third stage when the learner understands that information is important beyond acquisition and that it can be applied to specific situations. The fourth stage represents a pivotal change, as the learner develops a deeper understanding of the topic beyond the surface level. The fifth stage involves "seeing things in a different way," and the sixth level involves "changing as a person." Entwistle and Peterson note:

> As people begin to see learning as involving the effort to make sense of ideas for themselves by relating it to their previous knowledge and experience, information becomes transformed into personal meaning. Beyond that, learning involves seeing things in an importantly different light, and so becomes fully transformative. Finally, people begin to see that learning may bring about a more fundamental change: changing as a person.[847]

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[845] Ibid. p. 409, citing Perry, W.G. *Forms of Intellectual and Ethical Development in the College Years: A Scheme*, New York: Holt, Rinehart & Winston, 1970.

[846] Marton, Ference, G. Dall'Alba, and E. Beaty. "Conceptions of Learning," *International Journal of Educational Research*, vol. 19, 1993: 277-300. cited in Entwistle, and Peterson. "Conceptions of Learning and Knowledge in Higher Education: Relationships with Study Behaviour and Influences of Learning Environments." p. 411.

[847] Entwistle, and Peterson. "Conceptions of Learning and Knowledge in Higher Education: Relationships with Study Behaviour and Influences of Learning Environments." p. 411.

In addition, researchers have found that the learner's *intention*, or approach to the material, and *interest* in the subject are the main factors in choosing specific learning processes. The intention to understand ideas interesting to oneself more often leads to a deep approach to learning, whereas an intention to fulfill course requirements alone more often leads to a surface approach, using routine memorization and unreflective study strategies. This understanding has led to an appreciation of the importance of context and learning environments in learning, and has moved away from typecasting learners as being either deep or surface learners alone. In other words, learners may use a deep approach to material they are interested in learning, and the same learners might use a more surface approach to fulfill course requirements in subjects they are not interested in learning.

According to Entwistle and Peterson, as learners develop their ability to learn, they develop "metacognition," or the awareness of their learning processes, and are able to adapt the appropriate processes to specific contexts and tasks. For example, some learning needs to focus on memorization, such as that needed to learn a language, whereas other learning needs to proceed to a deeper level in order to increase understanding and meaning. Entwistle and Peterson believe that, at the university level, "current innovations in university curricula concentrate on shifting students towards deep approaches and self-regulation," and that deep, conceptual understanding is increasingly expected.[848]

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[848] Ibid.

Figure 22. Comparison among categories describing conceptions of knowledge and of learning

Conceptions of knowledge

Dualism   *Multiplicity*   *Relativism*   *Commitment*

| Knowledge as absolute, provided by authorities | → | Multiple perspectives —opinions of equal | → | Awareness of knowledge as provisional | → | Evidence used to reason among alternatives | → | Commitment to a personal, reasoned perspective |

Pivotal position

Expanding awareness through a broader, integrative conception ⟹ Recognizing differing forms of knowledge and learning   **Changing as a person—sense of identity**

Threshold

| Acquiring factual information | → | Memorising what has to be learned | → | Applying and using knowledge | — | Understanding what has been learned | | Seeing things in a different way |

Reproducing/surface learning   *Seeking meaning/deep learning*

Conceptions of learning

Source: Adapted from Entwistle, Noel J., and Elizabeth R. Peterson. "Conceptions of Learning and Knowledge in Higher Education: Relationships with Study Behaviour and Influences of Learning Environments." *International Journal of Educational Research* 41 (2004): 407–428. p. 409.

6.3.2 Approaches to learning styles

There is an extensive literature on approaches to learning styles, which takes its empirical evidence from experimental research and systematic observations of students while they are learning. Noel Entwistle and Velda McCune describe the evolution of cognitive

psychology and educational research on learning, and the parallel measurement of study methods and learning during the past four decades.[849] They observe that in the 1960s and 1970s research into learning stressed the importance of the student's own effort, study habits, and motivation in determining levels of academic achievement. At that time, the different levels of processing information distinguished surface and deep approaches to learning as rote and meaningful, respectively. As we saw above, surface approaches involve memorization and an orientation towards reproducing what is studied, and deep approaches include a search for personal understanding.

According to Entwistle and McCune, in the 1980s two additional approaches to learning, which linked motivation to learning approaches, were added to the taxonomy. These included an achieving approach and a nonacademic approach. The achieving approach includes strategies that take course or learning requirements into consideration, has goals such as trying to acquire high grades, and involves areas of time management, concentration, and study organization. The nonacademic approach indicates negative attitudes to studying. This approach implies low metacognitive awareness, and an over-dependence on external sources for direction.

These four approaches to learning—surface, deep, achieving, and non-academic—are all connected, and individual students use all of them, depending on the context, although students may prefer to use one style over another. Subsequently, these approaches have been and continue to be used in training programs to teach students how to learn.

Vermunt used the four approaches to learning, which he called "learning styles"—meaning directed (deep), reproduction directed (surface), application directed (achieving), and undirected (nonacademic)—to develop the *Inventory of Learning Styles,* a tool to be used both for research into learning and for learning to learn.[850] Entwistle and McCune affirm:

> The term 'style' is used here rather in the same sense that 'orientation to studying' was used earlier—to indicate a grouping of inter-related scales. It is seen in terms of 'relatively stable, but not unchangeable, ways in which students learn […]—not […] as an unchangeable personality attribute, but as the result of the temporal interplay between personal and contextual influences'" (Vermunt, 1996).[851]

Specific elements of these four learning styles are seen in Table 12 below, reproduced from Entwistle and McCune:

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[849] Entwistle, Noel, and Velda McCune. "The Conceptual Bases of Study Strategy Inventories," *Educational Psychology Review*, vol. 16, no. 4, 2004: 325-345.
[850] Vermunt, J. D. "Metacognitive, Cognitive and Affective Aspects of Learning Styles and Strategies: A Phenomenographic Analysis," *Higher Education*, vol. 31, 1996: 25-50. cited in Entwistle, and McCune. "The Conceptual Bases of Study Strategy Inventories."
[851] Vermunt. "Metacognitive, Cognitive and Affective Aspects of Learning Styles and Strategies: A Phenomenographic Analysis." pp. 25–26, cited in Entwistle, and McCune. "The Conceptual Bases of Study Strategy Inventories."

Table 12. Four distinctive learning styles

Constructs at differing levels of analysis	Learning Styles			
	Meaning directed	**Reproduction directed**	**Application directed**	**Undirected**
Mental model	Construction of knowledge	Intake of knowledge	Use of knowledge	Relying on teachers or other students
Learning orientation	Personal orientation	Certificate and self-test orientation	Vocational orientation	Ambivalent
Regulation of learning	Mostly self-regulation	Mostly external regulation	Both external and internal regulation	Lack of regulation
Cognitive processes	Deep processing	Stepwise [surface] processing	Concrete processing	Processing not identified
Affective processes	Intrinsic interest	Fear of forgetting	Practical interest	Low self-esteem and expectation of failure

Source: Entwistle, Noel, and Velda McCune. "The Conceptual Bases of Study Strategy Inventories." *Educational Psychology Review* 16, no. 4 (2004): 325–345. Based on Vermunt, J. D. "Metacognitive, Cognitive and Affective Aspects of Learning Styles and Strategies: A Phenomenographic Analysis." *Higher Education* 31 (1996): 25–50.

In Table 12, *mental model* describes how students think about the nature of knowledge; *learning orientation,* which is also called "learning approaches," describes the reasons and goals for learning, which may be personal, academic, vocational, or ambivalent (e.g., social reasons, such as attending classes to meet friends, rather than to learn); *regulation of learning* points to the self-regulation that is needed for lifelong learning, and to the external regulations found mostly in school settings; *cognitive processes* refer to deep and surface (here called "stepwise") processing, as well as to the "concrete processing" that is generally associated with learning for vocations; and *affective processing* refers to elements such as interest in the subject matter, fear of forgetting, and test anxiety.

It can be seen from Table 12 that the elements most directly linked with the self-regulation needed for lifelong learning, which we look at in more detail below, are those listed in the first "meaning directed" column. Entwistle and McCune note:

> The first component [meaning directed] linked self-regulation, combined with deep and concrete processing, to a mental model of constructing knowledge. It

also incorporated orientations that indicated personal interest in the subject matter, rather than in obtaining certificates.[852]

From an indicator perspective, therefore, the challenge in determining the degree to which students are prepared for and have a proclivity to lifelong learning is to assess the proportion of the population that scores strongly on the specific attributes that are associated with the meaning-directed learning style and listed in the first column of Table 12. Conversely, if a higher proportion of the population scored more strongly on the attributes in columns 2 and 4, for example, it would be reasonable to conclude that our learning systems have not adequately prepared students for lifelong learning and that they are less likely to become lifelong learners.

6.3.3 Self-regulation in lifelong learning

Educational researchers, practicing educators, and policy-makers identify self-regulation in learning (SRL), or the capacity for learners to direct their own learning, as one of the most important elements necessary for lifelong learning.[853] In a 2005 review of self-regulated learning, Monique Boekaerts of the University of Leiden in the Netherlands and Lyn Corno of Columbia University in the U.S. note:

> Researchers in particular argue that the capacity to self-regulate is central to our assumptions about learning, decision making, problem solving, and resource management in education, and they have promised assessment instruments and intervention programs to promote self-regulation (SR).[854]

Early attempts to improve self-regulation skills, according to Boekaerts and Corno, either encouraged individual students toward self-management, or directly taught cognitive and metacognitive skills and learning strategies as tools to use in the classroom. New research into self-regulatory skills, and volitional strategies that students use in various content domains subsequently led to adopting a broader goal of becoming responsible and independent learners in a variety of contexts.[855]

In a separate article, Boekaerts notes:

> At present, being able to regulate your own learning is viewed by educational psychologists and policy makers alike as the key to successful learning in school and beyond. Self-regulation means being able to develop knowledge, skills, and attitudes, which can be transferred from one learning context to another and from

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[852] Entwistle, and McCune. "The Conceptual Bases of Study Strategy Inventories." p. 337.

[853] Boekaerts, Monique, and Lyn Corno. "Self-Regulation in the Classroom: A Perspective on Assessment and Intervention," *Applied Psychology: An International Review*, vol. 54, no. 2, 2005: 199-231.

[854] Ibid.

[855] Ibid. p. 224.

learning situations in which this information has been acquired to a leisure and work context […]. Indeed, these skills are essential for the appraisal of non-traditional learning environments as powerful facilitators of learning and for the use of resources that are available in these environments.[856]

Boekaerts and Alexander Minnaert also note that research into the dynamics and outcomes of self-regulated learning "has potential implications for creating optimal learning environments" in areas other than classroom situations, such as various informal learning environments.[857] However, they observe that most of the research on self-regulated learning has been in formal learning environments, and very little is known about self-regulated learning in informal learning settings, although self-regulation skills should apply to both contexts.[858]

Philip H. Winne of Simon Fraser University in British Columbia remarks that it is important to keep the key element of self-regulated learning in mind:

> Learners are agents who construct knowledge in the changing milieu framed by knowledge, beliefs, motivational dispositions and other propositions 'in' their minds plus information they access in their environment, whether this be from solo studies or participation in social contexts. We must come to understand better what learners understand and how they forge these understandings.[859]

6.3.4 Self-regulated learning skills

According to Boekaerts and Corno, there are various models of SRL, each emphasizing slightly different aspects, such as volitional, cognitive, or socio-cultural dimensions, but all of these models share basic assumptions.[860] Barbara De La Harpe and Alex Radloff in Australia reviewed models of self-regulation learning in the literature and found that they were generally classified according to cognitive learning strategies, metacognitive skills needed to be aware of personal learning processes, motivation, and affect skills.[861]

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[856] Boekaerts, Monique. "Self-Regulated Learning: Where We Are Today ", *International Journal of Educational Research*, vol. 31, 1999: 445-457. p. 446, 453.

[857] Boekaerts, Monique, and Alexander Minnaert. "Self-Regulation with Respect to Informal Learning ", *International Journal of Educational Research*, vol. 31, 1999: 533-544. p. 533.

[858] Ibid.

[859] Winne, Philip H. "A Perspective on State-of-the-Art Research on Self-Regulated Learning ", *Instructional Science*, vol. 33, 2005: 559-565. p. 563.

[860] Boekaerts, and Corno. "Self-Regulation in the Classroom: A Perspective on Assessment and Intervention."

[861] De La Harpe, Barbara, and Alex Radloff. "Informed Teachers and Learners: The Importance of Assessing the Characteristics Needed for Lifelong Learning," *Studies in Continuing Education*, vol. 22, no. 2, 2000: 169-182.

De La Harpe and Radloff also believe that the accomplishment of these "skills and will" is also often associated with high academic achievement. As noted by U.S. researchers Steven Robbins, et al. in a recent meta-analysis, self-efficacy (a person's perception of his or her ability to reach a goal)[862] and motivation to achieve have the strongest effects on college grade point average.[863] However, they also note that learning success includes more than grade point averages:

> Conceptual confusion occurs when defining college success and its determinants. A good example is the long-standing tradition within the educational literature of referring to noncognitive predictors as anything but standardized academic achievement and aptitude tests and school-based academic performance (e.g., grade point average and class rank), whereas, within cognitive psychology, a broad range of constructs are viewed as cognitive, including self-concepts such as self-efficacy beliefs and outcome expectancies, meta-cognitive knowledge, and achievement and performance goals.[864]

MacLeod, Butler, and Syer of the University of British Columbia present a simplified model of the processes of self-regulated learning, which illustrates the relationships between knowledge, beliefs, motivation (including the affective element of self-efficacy), metacognition, and cognitive learning strategies.[865] This model, which is reproduced in Figure 23 below, shows that these processes are based, in part, on the demands of the specific task, and are not linear, but rather are interconnected through a series of feedback loops.

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[862] "Self-efficacy beliefs…are neither global personality traits nor general self-concept, but rather specific self-conceptions that individuals develop mainly from their master experiences (successes/failures) in different activities… [They are] characterized by their situational and behavioral specificity, [and] are better predictors of motivation and behavior in a specific field than are global indices of self-concept." Montalvo, Fermin Torrano, and Maria Carmen Gonzalez Torrres. "Self-Regulated Learning: Current and Future Directions," *Electronic Journal of Research in Educational Psychology*, vol. 2, no. 1, 2004: 1-34. p. 8.

[863] Robbins, Steven B., Kristy Lauver, Huy Le, Daniel Davis, Ronelle Langley, and Aaron Carlstrom. "Do Psychosocial and Study Skill Factors Predict College Outcomes? A Meta-Analysis," *Psychological Bulletin*, vol. 130, no. 2, 2004: 261-288.

[864] Ibid. p. 261.

[865] MacLeod, W.B., D.L. Butler, and K.D. Syer. "Beyond Achievement Data: Assessing Changes in Metacognition and Strategic Learning." Paper presented at the coordinated symposium of the annual meeting of the American Educational Research Association, 1996; accessed September 2006; available from http://www.ecps.educ.ubc.ca/faculty/Butler/ConferAERA_1996_metacognition.pdf.

Figure 23. A simplified model of self-regulated learning processes

TASK DEMANDS
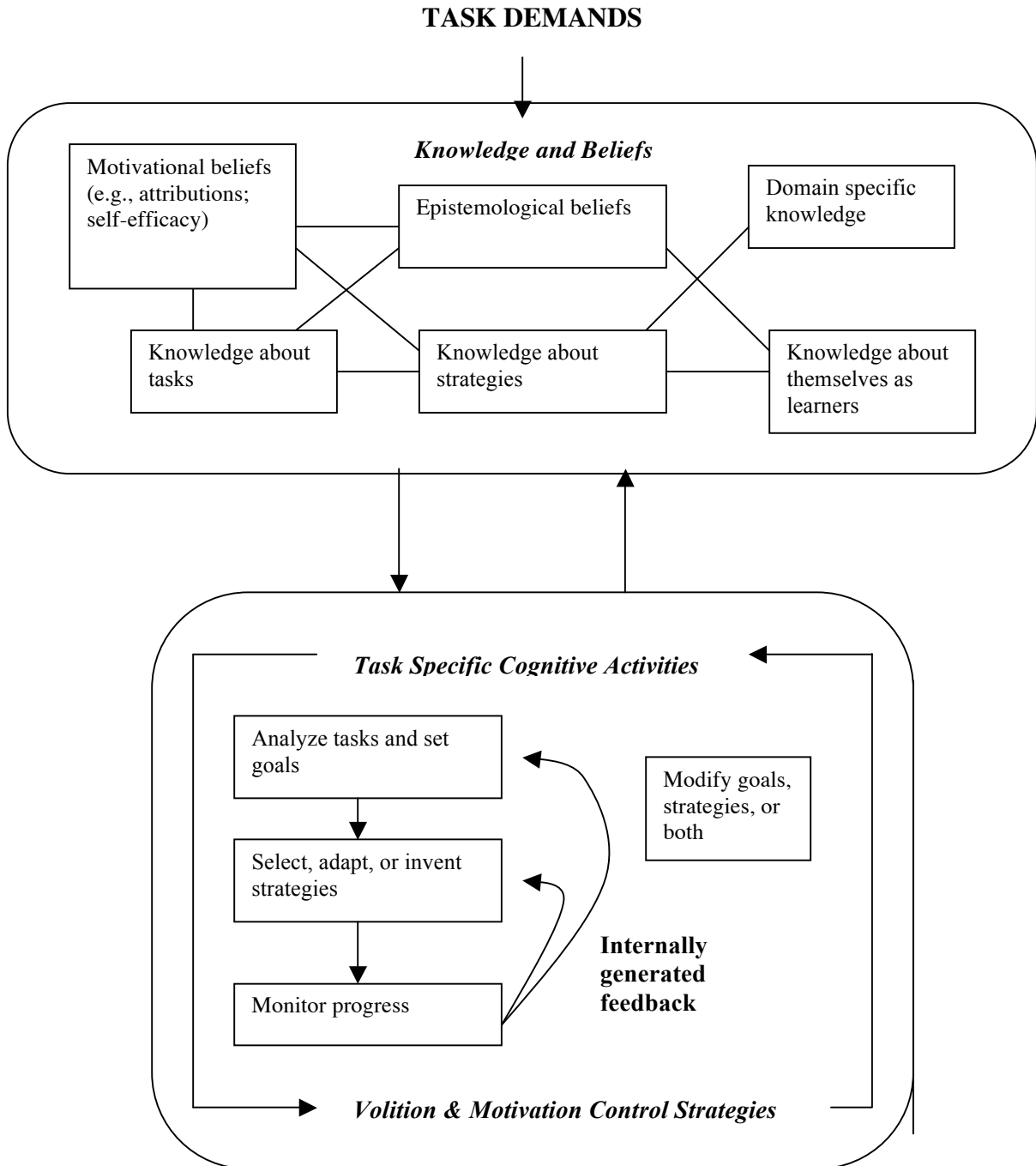
Source: MacLeod, W.B., D.L. Butler, and K.D. Syer. "Beyond Achievement Data: Assessing Changes in Metacognition and Strategic Learning," Paper presented at the coordinated symposium of the annual meeting of the American Educational Research Association, 1996; accessed September 2006; available from http://www.ecps.educ.ubc.ca/faculty/Butler/ConferAERA 1996 metacognition.pdf

More specifically, De La Harpe and Radloff identified the skills needed for self-regulated learning to include:

- **Cognitive learning strategies**
  Well-developed set of reasoning and thinking skills

- **Metacognitive skills**
  Self-knowledge
  Ability to reflect on and regulate one's own learning
  Good self-management skills:
    Well-organized
    Effective management of time and effort
    [Knowledge of] when and how to seek help
    [Knowledge of] how to collaborate with peers
    [G]ood study habits
    [I]n control of own learning

- **Motivation**
    Motivation to learn
    Belief that the material is interesting and important to learn

- **Affect**
    Self-confidence
    Persistence and a positive view of the value of learning
    Positive feelings about oneself as a learner
    Ability to manage one's feelings and the highs and lows of study
    Low test anxiety[866]

These skills are important to assess in order to understand if the public is well prepared for lifelong learning and able to be effective lifelong learners. Assessment tools capable of scoring the public according to the skills listed by De La Harpe and Radloff above have the potential to provide the data needed to populate indicators of lifelong learning. The development of such assessment tools is certainly possible in this important area, but such tools have not yet been systematically applied at national levels.

Paul Pintrich of the University of Michigan describes **cognitive learning strategies** as using "rehearsal, elaboration, and organizational strategies."[867] Rehearsal strategies involve memorization and the ability to select important information from texts. Elaboration strategies include the ability to paraphrase or summarize the material to be learned, create analogies, connect ideas, and explain what one has learned. Organizational

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[866] De La Harpe, and Radloff. "Informed Teachers and Learners: The Importance of Assessing the Characteristics Needed for Lifelong Learning."
[867] Pintrich, Paul R. "The Role of Motivation in Promoting and Sustaining Self-Regulated Learning," *International Journal of Educational Research*, vol. 31, 1999: 459-470.

strategies represent a deeper form of learning process, which includes an ability to think critically about the material, and use a variety of techniques for selecting and organizing ideas.

Metacognitive skills, as explained by J. H. Flavell, refer to:

> … two aspects, namely the students' self-awareness of a knowledge base in which information is stored about how, when, and where to use various cognitive strategies, and their self-awareness of and access to strategies that direct learning (e.g., monitoring difficulty level, a feeling of knowing).[868]

Entwistle and McCune observe that recent research into approaches to learning identifies *metacognition* as being crucial in learning to be lifelong learners. They note:

> In education, 'metacognition' has been used to encompass beliefs and knowledge about learning, as well as monitoring, regulating, and reflecting on, learning. The term 'self-regulation' overlaps with this grouping, also referring to students monitoring and regulating their learning. Conceptualizations of deep and strategic approaches in the earlier inventories implicitly included certain aspects of these ideas; 'time management,' for example, can be seen as a form of self-regulation. The newer inventories, however, made these dimensions explicit and emphasized their value in encouraging reflection on study processes.[869]

Motivation and goal-setting are also important aspects of self-regulated learning since they indicate why students do what they do.[870] Pintrich explains that three types of motivational beliefs are important:

1. self-efficacy beliefs, or judgements about whether one is capable of learning the material
2. task value beliefs, or beliefs about the importance of, or value of the task, which also includes having an interest in what one is learning
3. goal orientations, which can include focus on mastery and learning of the task, grades, or other extrinsic reasons for doing the task, or "relative ability in relation to social comparisons with other students."[871]

Self-efficacy beliefs, task-value beliefs, and adopting an intrinsic goal (as opposed to an extrinsic goal) are all positively related to self-regulated learning. Reliable and consistent assessments of the prevalence of these beliefs and goals among the public would

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[868] Flavell, J.H. "Metacognition and Cognitive Monitoring: A New Area of Cognitive Development Inquiry," *American Psychologist*, vol. 34, 1979: 906-911. cited in De La Harpe, and Radloff. "Informed Teachers and Learners: The Importance of Assessing the Characteristics Needed for Lifelong Learning." p. 201.

[869] Entwistle, and McCune. "The Conceptual Bases of Study Strategy Inventories." p. 333–334.

[870] Boekaerts. "Self-Regulated Learning: Where We Are Today ".

[871] Pintrich. "The Role of Motivation in Promoting and Sustaining Self-Regulated Learning." p. 462.

therefore provide the data for further important indicators of the preparedness and propensity for lifelong learning of the populace. Pintrich outlines the position:

> Students who believe they can learn and are confident in their skills are more likely to report the use of self-regulatory strategies […]. Students who believe that their course work is interesting, important, and useful are more likely to report the use of self-regulatory strategies […]. If students set as their goal self-improvement and learning, then they will be much more likely to continue to engage in various cognitive and metacognitive activities in order to improve their learning and comprehension. The goal or criterion of learning and mastery seems to be a much better standard for self-regulated learning than an extrinsic goal. When operating under an extrinsic goal of just getting good grades, students may be able to attain this goal without much in-depth cognition or self-regulation.[872]

Boekaerts and Corno propose that the idea that there is a direct, uninterrupted path from goal-setting in self-regulation to accomplishing those goals is no longer accepted.[873] Instead, more recent research views goal-pursuit as "a complex path that sometimes reflects engagement, sometimes disengagement, and sometimes avoidance or delay."[874] Different types of goals interact and change over time, and are not linear. Boekaerts and Corno note that volitional strategies, therefore, are important for persistence and resource management. Volition has been defined as the ability of learners to maintain the effort to achieve goals, especially when they face adversity.[875]

Affect includes elements such as self-confidence, interest in the subject matter, fear of forgetting, and test anxiety, which are the emotional elements of learning most often assessed.[876] Deborah Butler of the University of British Columbia and Sylvie C. Cartier of the Université de Montréal note that self-regulated learning is mediated by affect, or the emotions that learners experience, before, during, and after completing the learning task.[877] For example:

> [S]tudents who do not believe they can be successful at an activity (low self-perceptions of competence and control), do not perceive a task to be important or interesting (low perceptions of task value), and/or feel stressed while learning

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[872] Ibid. p. 467–468.

[873] Boekaerts, and Corno. "Self-Regulation in the Classroom: A Perspective on Assessment and Intervention."

[874] Ibid. p. 202.

[875] Wolters, C. A. "Self-Regulated Learning and College Students' Regulation of Motivation," *Journal of Educational Psychology*, vol. 90, 1998: 224-235.

[876] Duncan, Teresa Garcia, and Wilbert J. McKeachie. "The Making of the Motivated Strategies for Learning Questionnaire," *Educational Psychologist*, vol. 40, no. 2, 2005: 117-128.

[877] Butler, Deborah L., and Sylvie C. Cartier. *Multiple Complementary Methods for Understanding Self-Regulated Learning as Situated in Context*, Paper presented at the April 2005 annual meetings of the American Educational Research Association. Montreal, QC., 2005; accessed September 2006; available from http://www.ecps.educ.ubc.ca/faculty/Butler/Confer/Butler_Cartier 2005 AERA Paper Final.pdf.

(negative emotions) may seek to avoid a task rather than to invest effort in self-directing learning.[878]

In addition, they note that students may be more concerned with achieving emotional wellbeing rather than focusing on academic or learning objectives when regulating their own learning processes; however: "[s]uccessful students may use self-regulating strategies to control the impact of negative emotions and redirect learning towards mastery goals (managing motivation and emotions)."[879]

In the following section we look at some of the quantitative instruments that are used to assess the skills and characteristics of self-regulated learning, mainly in formal learning contexts. Such assessment instruments, and their extension to systematic national surveying, are essential in order to operationalize the concepts presented in this section and to populate potential indicators for lifelong learning.

6.4 Assessments of self-regulated learning

Learning assessments have traditionally focused on the content of learning, rather than on the process of learning, which is what is needed for self-regulation evaluations, and therefore for potential indicators of preparedness and propensity for lifelong learning. However, this prior emphasis on content rather than process has started to change with new generations of assessment instruments. This bodes well for the development of useful data for lifelong learning indicators.

Assessments of self-regulation characteristics are presently used most often to evaluate students' learning strategies in classrooms, mainly as learning tools for feedback to students. They also have been used extensively to evaluate "learning to learn" programs in high schools and universities. Assessment strategies include a variety of methods such as questionnaires, interviews, writing activities, and teacher-constructed techniques. Generally, investigators recommend a combination of techniques to assess self-regulated learning in any learning context. The existing evaluation instruments, used primarily in classrooms, will have to be applied and extended to the national level through survey instruments, in order to develop national data sets useful for assessing preparedness for lifelong learning.

However, there are key conceptual challenges in classifying respondents that must be addressed before existing assessment instruments can be usefully applied nationally. For example, as discussed in section 6.3.4, learners choose their specific approaches to learning depending on the context of the learning, and it might be misleading to classify

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[878] Ibid., accessed. p. 2.
[879] Ibid., accessed. p. 2.

them according to one approach, as, for instance, either a deep or a surface learner.[880] On the other hand, some researchers note that learners often do seem to prefer a particular approach, and often do use one approach more than the other, no matter what the context may be.[881]

These challenges are not insuperable, since national survey instruments might specify the context for particular questions in order to ensure that results and classifications are comparable. It is clearly not possible for a large-scale survey to assess individual approaches to learning in specific contexts, which is what educators recommend when such assessment tools are used in classroom contexts to provide feedback to learners. However, it is possible for a more generalized national survey to assess certain characteristics of learners and their general approaches to learning, including their overall tendency to use self-regulated approaches to learning. This general approach could shed some important light on whether or not Bhutanese have the interest and skills required to pursue a course of lifelong learning.

Although we have not found any large-scale assessments of this type, other than the Programme for International Student Assessment (PISA), conducted by the Organisation for Economic Co-operation and Development (OECD), which we discuss below, it is certainly feasible to develop such a tool for Bhutan to assess the various specific skills and qualities described in the previous section. Again, taking a long-term view of the development of the GNH education system, this should eventually make it possible to include quite a detailed and comprehensive assessment of Bhutanese skills and interest in lifelong learning. With this long-term goal in mind, this section focuses on some specific questionnaire instruments that have potential for national extension and application. With adaptation to Bhutan, these instruments may eventually enable an assessment of the degree to which the Bhutanese populace has knowledge of learning strategies and the self-regulation skills necessary for lifelong learning.

6.4.1 Self-regulation assessment instruments

According to Entwistle and McCune, investigators have incorporated both the original and the most recent approaches to learning, which we discussed above, in developing assessment instruments for self-regulated learning.[882] This integrated approach is most clearly seen in two instruments: the *Inventory of Learning Styles* (ILS), developed by J.

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[880] Boekaerts, and Corno. "Self-Regulation in the Classroom: A Perspective on Assessment and Intervention."

[881] Baumert, Jurgen, Eckhard Klieme, Michael Neubrand, Manfred Prenzel, Ulrich Schiefele, Wolfgang Schneider, Klaus-Jurgen Tillmann, and Manfred Weiss. *Self-Regulated Learning as a Cross-Curricular Competence*, Max-Planck-Institut fur Bildungsforschung, 2000; accessed September 2006; available from http://www.mpib-berlin.mpg.de/en/Pisa/pdfs/CCCengl.pdf.

[882] Entwistle, and McCune. "The Conceptual Bases of Study Strategy Inventories."

D. Vermunt and his colleagues at Utrecht University, the Netherlands,[883] and the *Motivated Strategies for Learning Questionnaire* (MSLQ), developed by Paul Pintrich and his colleagues at the University of Michigan.[884] Entwistle and McCune observe that both instruments have strong roots in the mainstream psychological literature. The ILS, however, has no explicit motivational items, though motivation has been identified as an important element of self-regulated learning, as noted in the previous section.

De La Harpe and Radloff list many assessment instruments but suggest that only two of these measure all four aspects of the learning characteristics listed in section 6.3.4: *The Learning and Study Strategies Inventory* (LASSI) and the *Motivated Strategies for Learning Questionnaire* (MSLQ). The LASSI is a Likert-type self-report questionnaire that consists of ten scales, including five on motivation and self-management and five on cognitive strategies.[885] However, Entwistle and McCune argue that it is an early instrument designed to assess study skill programs, and does not include more recent ideas on metacognition and self-regulation.[886]

The MSLQ, which we discuss in more detail below, has been the instrument most consistently recognized in the literature as a valid and reliable means to assess the understanding and strategies of self-regulated learning. The MSLQ concentrates on the positive "deep" and "self-regulation" aspects of learning, in which, Entwistle and McCune note, the "explicit and detailed metacognitive and self-regulation elements are distinctive."[887] They also argue that the MSLQ contains the most explicit recognition of collaboration within learning:

> Most of the inventories describe studying essentially as a solitary activity affecting the individual. In higher education today, collaboration of various forms is being given greater prominence, and this should now be reflected in the descriptions of study strategies.[888]

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[883] Vermunt. "Metacognitive, Cognitive and Affective Aspects of Learning Styles and Strategies: A Phenomenographic Analysis."
, Vermunt, J. D. "The Regulation of Constructive Learning Processes," *British Journal of Educational Psychology*, vol. 68, 1998: 149-171. cited in Entwistle, and McCune. "The Conceptual Bases of Study Strategy Inventories."
[884] Pintrich, P.R., D.A. Smith, T. Garcia, and W.J. McKeachie. *A Manual for the Use of the Motivated Strategies for Learning Questionnaire (MSLQ)*, Ann Arbor, Michigan: National Center for Research to Improve Postsecondary Teaching and Learning, University of Michigan, 1991. cited in Entwistle, and McCune. "The Conceptual Bases of Study Strategy Inventories."
[885] Weinstein, C. E., S. A. Zimmerman, and D. R. Palmer. "Assessing Learning Strategies: The Design and Development of the LASSI [Learning and Study Strategies Inventory]," in *Learning and Study Strategies: Issues in Assessment, Instruction, and Evaluation*, ed. Weinstein, C. E., E.T. Goetz and P. A. Alexander. San Diego: Academic Press, 1988.
[886] Entwistle, and McCune. "The Conceptual Bases of Study Strategy Inventories."
[887] Ibid. p. 334.
[888] Ibid. p. 340.

Inspired by other assessment tools, including those mentioned above, Canadians Deborah Butler and Silvie Cartier are developing a new self-report questionnaire to assess self-regulated learning skills, especially self-awareness and knowledge about important learning processes, which, they note, can be used for large-scale studies.[889] Although these instruments are still in the development stage, the questionnaires may eventually provide an important tool to use in the development of lifelong indicators.

Butler and Cartier conceptualize self-regulated learning as "a complex, situated, dynamic process that describes individuals' learning in context." The questionnaires, *Reading to Learn,* which is designed for students from grade seven and above, and *Inquiry Learning,* designed for university level students, "consider interconnections among affect, motivation, cognition, and metacognition as they interact to shape an individual's situated engagement in tasks."[890]

According to Butler and Cartier, the questionnaires track "knowledge, perceptions, conceptions, emotions, interpretations, and self-awareness of processes that can be associated with students' engagement in learning."[891] They also note that aggregated data from the questionnaires can by used with additional tools such as correlation, multiple regression, structural equation modelling, and hierarchical linear modelling "for examining rich patterns across layers of context," to determine, for example, the relationships between perceptions and behaviour.[892] Butler and Cartier claim that the "questionnaire is indeed sensitive enough to capture differences in responses generated in different types of context by individuals who bring to learning different types of background and experiences."[893] To date, the questionnaires have been tested in British Columbia and Quebec. We have contacted the lead author asking for more information on the content of the questionnaires and results of the tests.

6.4.2 Weakness in existing scales

According to Boekaerts and Corno, some of the weaknesses in existing scales used to assess self-regulated learning, including the MSLQ, are that the models do not shed light on students who have divergent learning styles and who thus do not fit the standard model, and that non-academic goals, such as those relating to belonging, social support, safety, entertainment, and self-determination, are not captured.[894] They also warn that the use of these instruments has created some misconceptions in practice:

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[889] Butler, and Cartier. *Multiple Complementary Methods for Understanding Self-Regulated Learning as Situated in Context*, accessed.

[890] Ibid., accessed. p. 2.

[891] Ibid., accessed. p. 9.

[892] Ibid., accessed. p. 10.

[893] Ibid., accessed.

[894] Boekaerts, and Corno. "Self-Regulation in the Classroom: A Perspective on Assessment and Intervention."

For example, some researchers using these instruments in field studies informed participating teachers that certain of their students were able to self-regulate their learning while others were not. Teachers were told, on the basis of evidence from the self-report measures, that some students appeared to lack SR [self-regulation] capability, and that they relied routinely on external regulation instead. Thus, external regulation has been mistakenly interpreted in opposition to SR, rather than as a continuum of response depending on situations.[895]

In addition, scales such as the MSLQ depend on learner self-reports and, as with all self-report measures, response bias is difficult to eliminate. For example, Boekaerts and Corno report that "Validity remains an issue with all forms of self-report because student recall can be inaccurate [and] systematic error may result when students consistently under- or overestimate their strategy use.[896]

Entwistle and McCune note that one of the elements lacking in all scales that measure learning styles is the lack of emphasis on emotion in learning. They observe:

> The positive forms are implicit in some of the scales describing academic interests and motivation, but only a negative form—anxiety or fear of failure—has been developed explicitly. Again, current work in educational psychology (see, for example, Boekaerts et al., 2000)[897] has begun to trace the interplay between cognition and emotion in relation to self-regulation, and that might be a way of extending inventories in the future.[898]

Boekaerts and Corno note the changes that are taking place in SR assessment strategies:

> As educational psychologists increasingly shift their attention from investigating SRL as a stable tendency or style, they have begun to study SRL as a developing and dynamic process within classrooms and other contexts where learning takes place. Generalised trait-like measures are still being used in large-scale studies when circumstances preclude more targeted situation-specific assessments; however, researchers no longer find it satisfactory to diagnose students' current repertoire of SRL and then assume that intervention programs should inculcate strategies in the repertoire. Researchers have come to realise that the ultimate goal of comprehensive, insightful models of SRL depends upon study of SR while it is being generated.[899]

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[895] Ibid.

[896] Ibid. p. 224.

[897] Boekerts, M., P. Pintrich, and M. Zeidner, eds. *Handbook of Self-Regulation*. San Diego, CA., Academic Press, 2000.

[898] Entwistle, and McCune. "The Conceptual Bases of Study Strategy Inventories." p. 340.

[899] Boekaerts, and Corno. "Self-Regulation in the Classroom: A Perspective on Assessment and Intervention." p. 208.

These new evaluations are still in experimental forms. However, large-scale indices will likely need to rely, in Boekaerts and Corno's phrase, on the "generalized trait-like measures" where "circumstances preclude more targeted situation-specific assessments."[900]

6.4.3 Motivated Strategies for Learning Questionnaire

As noted above, the *Motivated Strategies for Learning Questionnaire* (MSLQ) has been the instrument most consistently recognized in the literature as a valid and reliable means to assess the understanding and strategies of self-regulated learning.[901] In the late 1980s, Paul Pintrich and his colleagues at the University of Michigan,[902] who made the "contextualized, social-cognitive model of learning the dominant paradigm," developed the MSLQ instrument.[903] The socio-cognitive perspective of learning is characterized by the study of self-regulation as "an interaction of personal processes (cognitive, motivational / affective and biological), behavioral processes, and contextual processes."[904]

U.S. researchers and co-developers of the MSLQ, Teresa Duncan and Wilbert McKeachie, note that it has been translated into multiple languages, has been used by hundreds of researchers throughout the world, and is in the public domain.[905] Furthermore:

> The MSLQ, either in its entirety or its subscales, has been used frequently to address the nature of motivation and use of learning strategies across (a) content areas, including undergraduate statistics, undergraduate chemistry, high school social studies, and middle school physical education, as well as (b) target populations, including African American undergraduates, female undergraduate engineering majors, nursing students, and gifted high school students […]. Perhaps the most frequent use of the MSLQ is for evaluating the effects of courses on students […]. [S]tudent advising or student learning centers have implemented [it] as a form of needs assessment.[906]

Many universities in Canada use the MSLQ to assess "learning to learn courses." One example is Mount Saint Vincent University in Halifax, which requires students placed on

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[900] Ibid. p. 208.

[901] Entwistle, and McCune. "The Conceptual Bases of Study Strategy Inventories."; De La Harpe, and Radloff. "Informed Teachers and Learners: The Importance of Assessing the Characteristics Needed for Lifelong Learning."

[902] Pintrich, Smith, Garcia, and McKeachie. *A Manual for the Use of the Motivated Strategies for Learning Questionnaire (MSLQ)*.

[903] Duncan, and McKeachie. "The Making of the Motivated Strategies for Learning Questionnaire." p. 117.

[904] Montalvo, and Torrres. "Self-Regulated Learning: Current and Future Directions."

[905] Duncan, and McKeachie. "The Making of the Motivated Strategies for Learning Questionnaire."

[906] Ibid.

academic probation to take its "Student Success Course." It uses the MSLQ in its student evaluations both before and after the course is completed.[907]

The MSLQ can be used in its entirety, or specific subscales can be selected to use singly for the relevant case.[908] Duncan and McKeachie note that the scales are "designed to be modular and can be used to fit the needs of the researcher or instructor."[909]

Boekaerts and Corno explain that most instruments focus on the individual learner's knowledge and skills, but do not adequately account for contextual situations and differing learning environments, which elicit differing learning strategies in the learner.[910] However, researchers emphasize that the MSLQ is an example of an instrument that does use a domain-specific approach. Boekaerts and Corno remark:

> [T]he MSLQ […] measures reported cognitive and metacognitive strategy use in close connection to students' motivational beliefs and their techniques for managing resources in a specific domain, such as in an undergraduate college course. This is a quantitative approach to assessment that depends on relatively large numbers of respondents to serve predictive functions.[911]

However, although it is oriented towards use in classrooms, the MSLQ has been adapted for use in at least one large-scale index: it has been adapted to assess general, self-regulated learning in the Programme for International Student Assessment (PISA), as we describe below.

Paul Pintrich also emphasizes use of the MSLQ in classrooms, noting the importance of expanding research to include informal contexts, although he does not extend the use of the MSLQ for these purposes:

> Students' motivation and self-regulated learning are assumed to be context specific and, thus, a focus on the class or course level was seen as the most appropriate level of context. Accordingly, the MSLQ is not designed to assess students' global motivation and self-regulation for school or college […]. [O]ur work has focused on investigating the role of motivation and self regulated learning as it occurs in traditional classroom settings […]. It seems important for future research to understand how self-regulated learning develops in contexts,

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[907] Merritt, Allison, and Elizabeth Bowering. "Evaluation of the MSVU Student Success Course." Paper presented at the Canadian Psychological Association National Convention, 2006, Mount Saint Vincent University; accessed September 2006; available from http://www.msvu.ca/student_affairs/counselling/studentsuccesscourse.asp.

[908] Duncan, and McKeachie. "The Making of the Motivated Strategies for Learning Questionnaire."

[909] Ibid. p. 119.

[910] Boekaerts, and Corno. "Self-Regulation in the Classroom: A Perspective on Assessment and Intervention."

[911] Ibid. p. 209.

not just in classrooms, but other contexts outside schools such as families, play settings, and worksites.[912]

Duncan and McKeachie describe the MSLQ in some detail,[913] and the scales, categories, and questionnaire for the MSLQ are reproduced in Appendix 23. Basically, the MSLQ is an 81-item Likert-type self-report questionnaire that asks learners to report on concrete behaviours they might use as they study. It consists of a motivation section, with value, expectancy, and affective components; and a learning strategies section, consisting of cognitive, metacognitive, and resource management skills assessments.[914]

The motivation section contains 31 items that assess learners' goals and value beliefs, beliefs about whether they have the skills to succeed, and their test anxiety. Within this section, two subscales assess self-efficacy, in which "both expectancy for success (which is specific to task performance) and judgements of one's ability to accomplish a task and confidence in one's skills to perform a task are collapsed within the general term *self-efficacy*."[915] Furthermore, three subscales assess value beliefs, which focus on the reasons learners engage in a task, such as intrinsic goal orientation (a focus on learning and mastery), extrinsic goal orientation (a focus on grades and approval from others), and belief in the value of the task (judgements of how interesting, useful, and important the content is to the learner). Finally, one subscale assesses affect, specifically, test anxiety.

The learning strategies section consists of 50 items, which include 31 items that assess the use of metacognitive and cognitive strategies, and critical thinking; and 19 items that assess management of different learning resources. The metacognitive strategies subscale is one large subscale that includes:

- planning (setting goals),
- monitoring (of one's comprehension)
- regulating (e.g., adjusting reading speed depending on the task)

The cognitive strategies subscale includes:

- rehearsal (memorization)
- elaboration (paraphrasing, summarizing)
- organization strategies (outlining, creating tables)

The critical thinking subscale includes students' use of strategies:

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[912] Pintrich. "The Role of Motivation in Promoting and Sustaining Self-Regulated Learning." p. 463, 468–469.
[913] Duncan, and McKeachie. "The Making of the Motivated Strategies for Learning Questionnaire."
[914] Pintrich, Smith, Garcia, and McKeachie. *A Manual for the Use of the Motivated Strategies for Learning Questionnaire (MSLQ).*
[915] Duncan, and McKeachie. "The Making of the Motivated Strategies for Learning Questionnaire." p. 119.

- to make critical evaluations of ideas
- to apply previous knowledge to new situations

The resource management subscale includes strategies such as:

- time management
- environmental structuring (e.g., using one's time well, having an appropriate place to study),
- effort (e.g., persisting in the face of difficult or boring tasks),
- peer learning (e.g., using a study group or friend to help learn)
- help seeking (e.g., seeking help from peers or instructors when needed)[916]

The instrument is scored using a seven point Likert scale, from 1 (*not at all true of me*) to 7 (*very true of me*.) Duncan and McKeachie explain:

> Scale scores are constructed by taking the mean of the items that make up that scale. For example, intrinsic goal orientation has four items. An individual's score for intrinsic goal orientation would be computed by summing the four items and taking the average. Some scales contain negatively worded items, and the ratings for those items should be reversed before an individual's score is computed, so that the statistics reported represent the positive wording of all the items and higher scores indicate greater levels of the construct of interest.[917]

Duncan and McKeachie report that the MSLQ has shown fairly consistent results in the numerous research studies that have been conducted in classroom settings:

> In short, the MSLQ has proven to be a reliable and useful tool that can be adapted for a number of different purposes for researchers. In general, students who use more deep-processing strategies such as elaboration and organization and who attempt to control their cognition and behavior through the use of metacognitive planning, monitoring, and regulating strategies are more likely to do better in their course assignments, exams, and papers as well as overall course grade. In addition, students with positive motivational beliefs such as holding intrinsic goals for learning, high self-efficacy and task value, and lower levels of test anxiety tend to engage in deep-processing strategies and metacognitive regulation, compared to students with less adaptive motivational beliefs.[918]

Aside from the application of MSLQ to the Programme for International Student Assessment (PISA) described below, no additional independent investigation has been undertaken here to assess the adaptability of the MSLQ to a societal level, and its potential utility as an instrument to assess and report on the lifelong learning skills and

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[916] Ibid. p. 119.
[917] Ibid. p. 119.
[918] Ibid. p. 118.

propensity of a national populace. In this context, it is necessary to recall Paul Pintrich's advice that: "'It seems important for future research to understand how self-regulated learning develops in contexts, not just in classrooms, but other contexts outside schools such as families, play settings, and worksites.'"[919] Such research will almost certainly need to be undertaken before the MSLQ can be considered a suitable national-level tool. For the moment, the self-regulated learning assessment in PISA discussed below appears to be the most suitable tool available to assess lifelong learning skills.

6.4.4 Programme for International Student Assessment (PISA)

The Programme for International Student Assessment (PISA) is a large-scale, international assessment program, coordinated by the Organisation for Economic Co-operation and Development (OECD), which measures the abilities of 15-year olds from 57 countries (2006), primarily for reading skills, mathematics, and science.[920] The first cycle of PISA began in 2000 with 43 countries, with reading as the primary focus. The second cycle was completed in 2003 with 41 countries, with mathematics being the primary focus, and the third cycle was completed in 2006 with 57 countries, with science as the primary focus. PISA will be continued every three years, and, in 2009, the focus will shift back to reading. Sixty-two countries have now agreed to participate.

PISA also includes a number of optional questionnaires that are based, in part, on student self-reported behaviours, preferences, and assessments of their own abilities. One of these questionnaires, the *Cross-Curricular Competencies* (CCC) questionnaire, which was used only in 2000, measures self-regulated learning. Since this questionnaire was optional, only about half of the countries participating in PISA included it in their assessments.

The actual questionnaire items can be found in Appendix 24 of this literature review. In 2003, the questions were reformulated to focus on learning strategies associated with mathematics, and were included as a core component in PISA, rather than as a separate questionnaire;[921] in 2006, learning strategies associated specifically with science were included as a core component.

Artelt, et al. argue that the evidence shows that by age 15, which is the age of students assessed by PISA, students have developed knowledge about their own learning, and are able to give valid answers to questionnaire items that can predict their approach to

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[919] Pintrich. "The Role of Motivation in Promoting and Sustaining Self-Regulated Learning." p. 463, 468–469.

[920] Government of Canada. *PISA 2006*, 2006; accessed September 2006; available from http://www.pisa.gc.ca/pisa2006_e.shtml.

[921] Organisation for Economic Co-operation and Development (OECD). *The PISA [Programme for International Student Assessment] 2003 Assessment Framework - Mathematics, Reading, Science and Problem Solving, Knowledge and Skills*, OECD, 2003; accessed September 2006; available from http://www.pisa.oecd.org/dataoecd/46/14/33694881.pdf.

lifelong learning strategies.[922] Furthermore: "The emphasis on students' ability to regulate their own learning is particularly important in carrying learning skills through to less closely directed learning environments beyond the school classroom."[923] In addition, they note that the results represent "outcomes of schooling in their own right."[924]

According to Artelt, et al., the conceptual framework for the questionnaire was based, in part, on the work of Paul Pintrich, D.A.F. Smith, Teresa Garcia (Duncan), and Wilbert McKeachie,[925] the developers of the *Motivated Strategies for Learning Questionnaire* (MSLQ) discussed above. German researchers Jürgen Baumert, et al. give a detailed report on the conceptual basis of the PISA CCC questionnaire, including the instruments upon which it is based.[926] They specifically note scales based on the MSLQ, and also the *Kiel Learning Strategies Inventory* and the *Learning Strategies in Higher Education Inventory,* both of which are adaptations of the MSLQ. Also, a short version of the *Self-Description Questionnaire* (SDQ), developed by H.W. Marsh,[927] was used for the verbal, mathematical, and academic self-concept items. Baumert, et al. believe that the SDQ is "the best available measure of aspects of self-concept."[928]

The CCC questionnaire refers to general learning situations, rather than specific contexts, and focuses specifically on learning strategies, motivation, and self-efficacy, or belief in one's own abilities.[929] A report from OECD records:

> All three of these features play a complex part in the learning process and […] research in this area has demonstrated that being able to regulate one's learning is central to success in school and influences the degree to which people engage in further learning […]. Student motivation and engagement in schooling and learning are important outcomes of education. Students who leave school with the autonomy to set their own learning goals and with a sense that they can reach those goals are potential learners throughout life. Motivation and engagement can

[922] Artelt, Cordula, Jurgen Baumert, Nele Julius-McElvany, and Jules Peschar. *Learners for Life: Student Approaches to Learning. Results from PISA 2000*, Organisation for Economic Co-operation and Development, 2003; accessed September 2006; available from http://www1.oecd.org/publications/e-book/9603101E.PDF.

[923] Ibid., accessed. p. 9.

[924] Ibid., accessed. p. 9.

[925] Pintrich. "The Role of Motivation in Promoting and Sustaining Self-Regulated Learning."

[926] Baumert, Klieme, Neubrand, Prenzel, Schiefele, Schneider, Tillmann, and Weiss. *Self-Regulated Learning as a Cross-Curricular Competence*, accessed.

[927] Marsh, H. W. *Self-Description Questionnaire (SDQ) II: A Theoretical and Empirical Basis for the Measurement of Multiple Dimensions of Adolescent Self-Concept: An Interim Test Manual and a Research Monograph*, San Antonio, Texas: The Psychological Corporation, 1990.

[928] Baumert, Klieme, Neubrand, Prenzel, Schiefele, Schneider, Tillmann, and Weiss. *Self-Regulated Learning as a Cross-Curricular Competence*, accessed. p. 16.

[929] Organisation for Economic Co-operation and Development (OECD). "General Outcomes of Learning," in *Literacy Skills for the World of Tomorrow: Further Results from PISA 2000*, Chapter 4, OECD, 2003, accessed September 2006; available from http://www.uis.unesco.org/TEMPLATE/pdf/pisa/PISAplus_Eng_Ch4.pdf - search="oecd Chapter 4 "general outcomes of learning"".

also affect students' quality of life during their adolescence and can influence whether they will successfully pursue further educational or labour market opportunities.[930]

Artelt, et al., writing for the OECD, recognize the limitations, as well as the benefits, of large-scale surveys to measure self-regulated learning:

> A large-scale survey cannot easily make a direct assessment of the extent to which students actually regulate their learning in practice. However, research has […] identified some measurable characteristics of students that are associated with the tendency to regulate one's own learning as well as with better student performance. These characteristics are the three main aspects of approaches to learning that students were asked about in PISA: their confidence in their own learning abilities (self-regulated beliefs), their motivation, and their tendency to adopt certain learning strategies.[931]

According to Baumert et al., assessing individual components in self-regulated learning can capture predispositions or preferred learning procedures and self-efficacy beliefs.[932] In a discussion of PISA, they note that although these predispositions cannot be equated with actual behaviours, since what learners know is not always reflected in what they do, the measures "do reflect tendential strengths and weaknesses in current learning. The investigation of individual components will thus provide valuable indicators elucidating the underlying latent dimension of self-regulated learning."[933]

Artelt, et al. note that the results of PISA 2000, which they identify as the "comparison of the mean values of the cross-nationally comparable scales of learner characteristics," found relatively little difference between countries. A survey of the results:

> [R]elatively few schools succeed in promoting particularly strong approaches to learning among their students […]. [C]luster analysis […] identified a group of students with particularly strong motivation, self-confidence and learning strategies in combination and another particularly weak on these attributes […]. [T]his clustering effect is of similar strength in all of the countries surveyed. [More specifically,] four student clusters [were identified] of roughly equal size:
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> 1. Students in the first cluster [27.8% of all students] are strong across the board in terms of their attitudes towards learning and learning behaviour. They can be characterised the strongest learners.

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[930] Ibid. p. 120.

[931] Artelt, Baumert, Julius-McElvany, and Peschar. *Learners for Life: Student Approaches to Learning. Results from PISA 2000*, accessed. p. 9.

[932] Baumert, Klieme, Neubrand, Prenzel, Schiefele, Schneider, Tillmann, and Weiss. *Self-Regulated Learning as a Cross-Curricular Competence*, accessed.

[933] Ibid., accessed.

2.   Students in the second cluster [25.4% of all students] are stronger than average in these respects, except with respect to their interest and self-confidence in mathematics. They can be characterised as stronger learners, weaker in mathematics.

3.   Students in the third cluster [27.2% of all students] are weaker than average in most approaches to learning, but stronger in mathematics: weaker learners, stronger in mathematics.

4.   Students in the final cluster [19.6 % of all students] are weak across the board, in their learning attitude and behaviours; the weakest learners.

The quarter of students with generally strong learner characteristics are reading at about one proficiency level above those with generally weak characteristics. The results show that confidence in verbal abilities is positive everywhere, and also in every country stronger than confidence in mathematical abilities, which in most countries is negative overall. [The variation across countries when looking] at mean scores for *self-efficacy*—the degree to which students believe they can deal with learning challenges, even if they find them difficult […] appears to be more modest than for students' beliefs about their specific abilities […]. On the other hand, the countries where students believe most in their efficacy are not the same as those where students have greatest confidence in particular abilities in verbal and mathematical tasks. Those in Austria, Brazil, Mexico, and Sweden are most confident in being able to achieve even their difficult goals.

In all countries, students who tend to control their own learning processes and adapt them to the task at hand are characterised by a high level of confidence in their own abilities. Correlations with instrumental motivation and subject interest further indicate that students are more likely to use control strategies if they are motivated to learn by concrete incentives (e.g., occupational aspirations) or specific interests. Overall, about two thirds of the differences in the degree to which students use these strategies can be explained by differences in motivation and self-related beliefs. Thus the attitudes and learning behaviours of students are closely intertwined.

The PISA findings show a high degree of consistency within each country in the association between positive learning approaches and strong performance. All aspects of students' self-related beliefs examined in PISA are closely related to performance. In particular, students who think that they can succeed in challenging or difficult learning tasks (self-efficacy) are more likely to adopt strong strategies and to perform at high levels of reading literacy. Student preferences for *competitive* or *co-operative* learning are not highly correlated with their performance, but each may play a role in different situations and in motivating different students."[934]

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[934] Artelt, Baumert, Julius-McElvany, and Peschar. *Learners for Life: Student Approaches to Learning. Results from PISA 2000*, accessed. pp. 41–47, 50, 71–75.

7. Nonformal Learning

Nonformal education includes taught courses or lectures that do not constitute a continuous ladder of education leading to a formal qualification in the educational system.[935] It can refer to courses taken for personal interest to enrich one's life such as watercolor painting, computer use, carpentry, or kayak paddling, or to courses taken to upgrade skills or otherwise contribute to employment-related initiatives. There is an overlap with adult education and training, although some adult education is formal. Adult education indicators, however, are often equated with and used as a proxy for nonformal education. Nonformal education can also take place in many settings including formal educational institutions, community centres, on-the-job training, and distance education through the Internet.

Nonformal education can offer educational opportunities to a diverse range of learners from high school dropouts, to rural women, the unemployed, and the retired. Barriers to taking advantage of nonformal education or adult education and training include lack of time, family responsibilities, lack of interest, a negative relationship with previous educational experiences, and cost. Employers tend to sponsor younger workers, full-time employees, those with university degrees, and those with managerial and professional jobs to undertake nonformal learning that can enhance job-related skills.[936] Public sector employers and large firms provide more employee training than smaller firms, while the self-employed, older workers, those with low levels of initial education, and blue-collar workers are underrepresented in training programs. There does not appear to be a gender difference in propensity to engage in nonformal learning, however, and women are more likely than men to take non-job-related courses.

UNESCO, through its new Decade of Education for Sustainable Development (DESD) program, sees "the need to make sustainable development a more deliberate framework for [nonformal education] efforts and a more consistent thread in adult learning." Action plans and indicators for the DESD, however, have not been completed, and one of the authors of this study has been invited to contribute to that effort.[937]

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[935] Desjardins. "The Effects of Learning on Economic and Social Wellbeing: A Comparative Analysis."

[936] Baran, Joni, Gilles Beribe, Richard Roy, and Wendy Salmon. *Adult Education and Training in Canada: Key Knowledge Gaps*, Applied Research Branch, Strategic Policy, Human Resources Development Canada, 2000; accessed February 2005; available from http://www11.hrsdc.gc.ca/en/cs/sp/hrsdc/arb/publications/research/2000-000122/page10.shtml.

[937] United Nations Educational Scientific and Cultural Organization (UNESCO). *U.N. Decade of Education for Sustainable Development 2005-2014. International Implementation Scheme (Draft)*, accessed.

7.1 Work-related nonformal learning

7.1.1 Adult Education and Training Survey (AETS)

The most comprehensive source of data on adult education and training in Canada is Statistics Canada's Adult Education and Training Survey (AETS), which also is the only national survey to detail efforts by individuals and organizations to develop skills.[938] The AETS classifies learning as either "formal" or "informal" and does not actually use the term "nonformal." Structured education that does not lead to a formal degree or credential, such as "workplace learning," is still considered "formal learning" in the AETS, provided some course or organized training program is offered, whereas we are referring to this type of non-degree learning as "nonformal." "Informal learning" in both cases is not structured.

Data from the AETS are used to indicate participation in adult education for the Pan Canadian Education Indicator list. The AETS includes formal and nonformal learning in all locations, including university and college, private and commercial institutions, onsite workplace training, and distance education over the Internet. The AETS is administered as an occasional supplement to Statistics Canada's Labour Force Surveys, and was administered in 1992, 1994, 1998, and 2003. Four similar surveys were also administered in the 1980s, starting in 1984.[939] The surveys are administered in January with the preceeding 12 months being the reference year. They contain socio-economic and demographic variables as well as information on all forms of organized learning, including programs and courses (both employer and non-employer sponsored) and job-related and personal-interest-related motivations.[940] The survey has questions related to the incidence, frequency, duration, and place of adult education and training participation; sources and types of support for training; access and barriers to increasing participation, motivations, past and future expectations of participation; subject matter of courses taken and the self-perceived usefulness of the courses; and informal learning on the job.

The 2003 survey has been revised since 1998 and new questions make up more than half of the 2003 survey. The population in 2003 covers Canadians age 25 and older, whereas the earlier surveys included the 17–24 age group. The younger group was excluded from the 2003 survey since many in this group are still in formal schooling. One of the biggest changes in the 2003 survey is that questions concern mostly work-related programs and courses and only one question about personal interest courses remains: "In 2002, did you

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[938] Statistics Canada. *Adult Education and Training Survey (AETS)*, accessed.
[939] Statistics Canada. *Learning a Living: A Report on Adult Education and Training in Canada*, Human Resources Development Canada and Statistics Canada, Catalogue No. 81-586-XPE, 2001; accessed March 2005; available from http://www.statcan.ca/cgi-bin/downpub/listpub.cgi?catno=81-586-XIE1998001.
[940] Baran, Beribe, Roy, and Salmon. *Adult Education and Training in Canada: Key Knowledge Gaps*, accessed.

take any additional programs, courses or training for personal interest, including courses related to your hobbies?" (Question number SC_Q04.) No follow-up questions were asked about details of personal interest courses. New information was deduced regarding work-related nonformal education with questions asked to those training in apprenticeships, trade, or vocational programs specifically related to their trade. Questions regarding Internet use and distance education were added in 1998 and increased in 2003.

A major Statistics Canada paper reporting the findings from the AETS for 1998 says that its purpose is to "identify important adult-learning knowledge gaps," and specifically to look at the outcomes of adult learning.[941] The outcomes discussed, however, are concerned with the financial returns to education, rather than with learning *per se.* The focus is on private market measures such as increased productivity and earnings. The report does mention that social benefits of training are also important but qualifies that they are difficult to measure: "While there are some estimates of social rates of return for initial education (which take into account only a subset of potential social benefits), we are not aware of any specific measures of social returns to adult human capital investment."[942]

7.1.2 International Adult Literacy Survey (IALS)

The 1993 IALS is discussed in the adult literacy section of this review, since it is primarily a basic literacy survey. It does include 15 indicators on adult education and training, however.[943] These are used to examine the following:

- **Indicators 1–2:** overall incidence and intensity of adult education participation measured in terms of training rates and hours
- **Indicators 3–6:** rates of participation of specific subgroups (women in mid-career, older workers, unemployed, and those with low educational attainment) functioning as measures of demand for training
- **Indicators 7–10:** four dimensions of supply and economic support: participation rates in economic sectors employing blue-collar low-skilled workers and white-collar high-skilled workers, employer support for training, odds of receiving employer-sponsored training, and training efforts of medium-sized firms
- **Indicators 11–14:** main determinants (literacy use and skill, formal educational attainment, and labour force participation) and barriers to participation
- **Indicator 15:** measures social capital by participation in voluntary community activities and "trust in others"

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[941] Ibid., accessed.
[942] Ibid., accessed.
[943] Tuijnman, Albert, and Emmanuel Boudard. *International Adult Literacy Survey: Adult Education Participation in North America: International Perspectives*. Vol. 2005 Statistics Canada, Catalogue no. 89-574-XIE, 2001. In 2003 the IALS was renamed the International Adult Literacy and Skills Survey (IALSS).

7.1.3 Other Canadian adult education and training surveys

Other notable Canadian surveys concerning adult education and training mostly focus on participation rates and financial returns. They are:

- **The Conference Board of Canada Training and Development Survey**[944]

- **Workplace and Employee Survey:**[945] This is an annual survey from Statistics Canada and Human Resources and Social Development Canada, first administered in 1999 with a longitudinal design. The survey is in two parts: one for employers (6,300 firm locations) and one for employees (approximately 25,000). It asks about types of training offered and undertaken: professional, apprenticeship, new employee orientation, sales and marketing, computer hardware and software, office equipment and other equipment; group decision making and problem solving, team building, leadership, communication, literacy and numeracy, and occupational health and safety and environmental protection. From the perspective of the United Nations Decade of Education for Sustainable Development (DESD), it would be especially interesting if it were possible to identify the interest in environmental protection training. However, in this case, environmental protection is included with workplace safety so it is not possible to separate the responses.

- **The Workplace Training Survey:**[946] The survey was conducted by EKOS Research Associates, Inc. in 1995 for the Canadian Policy and Research Networks (CPRN): 2,500 establishments were surveyed by telephone and a detailed questionnaire was sent as a follow up to one-third of the respondents. The survey found that in 1995, 40% of Canadian industries had nonformal training programs with defined curriculum and goals, and 70% of Canadian industries had mostly informal forms of training.

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[944] Conference Board of Canada. *Website*, accessed October 2005; available from http://www.conferenceboard.ca.

[945] Statistics Canada, and Human Resources and Social Development Canada. *Workplace and Employee Survey*, Statistics Canada, 2005; accessed December 2005; available from http://www.statcan.ca.english/IPS/Data/71-585-XIE.htm questionnaire - http://www.statcan.ca/english/sdds/2615.htm.

[946] Betcherman, Gordon, Norm Leckie, and Kathryn McMullen. *Developing Skills in the Canadian Workplace: The Results of the Ekos Workplace Training Survey*, Canadian Policy Research Networks, 1997; accessed April 2005; available from http://www.cprn.com/en/doc.cfm?doc=1064.

7.2 Personal interest nonformal learning

As stated above, the AETS cycles prior to 2003 included questions on nonformal courses and programs that were taken for both work-related and personal interest-related reasons.[947] In 2003, the survey questionnaire was revised and the questions concerning personal interest courses were nearly eliminated. This is unfortunate, as information about these personal-interest related courses, programs, and other learning opportunities could provide insight into the potential for strengthening many key conditions of wellbeing, such as improvement in personal nutrition and health, for example. The omission of these questions about personal interest courses might be regarded as particularly unfortunate on the eve of the UN Decade of Education for Sustainable Development, as these data could potentially reveal information on knowledge of the natural world, and rates of participation in courses and programs designed to further sustainable living.

7.3 Apprenticeship or learning skilled trades

7.3.1 Apprenticeship training in Canada

Apprenticeship training is an ancient tradition of knowledge reproduction and development in which skills are transferred from someone in a recognized trade to an apprentice. Today, apprenticeship training in Canada is essentially a combination of on-the-job training with qualified experts and in-school training. Typically, 80% of apprenticeship time is nowadays spent in the work place, and 20% in a school setting.[948] Apprentices must work for a designated number of hours (ranging from 4,000 to 8,000 hours), depending on the industry, in order to qualify for a Certificate of Qualification. Typically, apprentices earn between 40% and 90% of the wages earned by someone qualified in the trade, and wages often increase as skills develop.[949]

Apprenticeship training and skilled trades learning are very important because they represent a long tradition and are a means of transferring needed knowledge and skills. In addition, this kind of learning has significant implications for quality of life development. In other words, a person whose work involves the use of special skills usually has a better quality of life than someone whose work is unskilled (sometimes referred to as

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[947] Statistics Canada. *Adult Education and Training Survey (AETS)*, accessed.

[948] Herod, Nicole. "Removing the (Perceived) Barriers to Apprenticeship Training." *Education Canada*, Canadian Education Association, Spring, 2005, accessed September 2006; available from http://www.cea-ace.ca/media/Removing_Barriers_Spr05.pdf.

[949] Nova Scotia Department of Education. *Apprenticeship. Frequently Asked Questions*, Halifax, Apprenticeship Training and Skill Development Division, 2006; accessed September 2006; available from http://www.apprenticeship.ednet.ns.ca/faq.shtml.

"McJobs"). Part of the reason for this is that skilled work in the West tends to be better paying, more secure, in higher demand, and more meaningful than unskilled work.

The labour situation in Canada is likely representative of that in many other countries as well. By the year 2015, it is predicted that Canada and the provinces are going to be facing a labour shortage "crisis," partially as a result of demographic changes and the high proportion of people who will reach retirement age. According to the Canadian Federation of Independent Business (CFIB) the shortage of skilled labour is already being felt in Canada, with thousands of skilled jobs remaining unfilled every year.[950] According to one CFIB survey conducted in 2002, nearly 46% of small businesses in Canada identified the shortage of skilled labour as a problem that has compromised their ability to expand and create jobs. The survey reported that nearly one out of every 20 jobs remains unfilled, and that one possible solution to the problem is training.[951]

However, not all analysts agree that a labour shortage is on the horizon. In 1998, two analytical reports from HRDC[952] found that there was little evidence to support the claim among employers of a skills shortage:

> [D]espite often loud complaints about skills shortages, little well developed and reliable information is available on the current or future occupational skill imbalances. At present, we simply do not know if labour market skill shortages constitute a serious problem in Canada.[953]

In a second HRDC report also published in 1998, Masse, et al. reported that their analysis of various indicators suggests that Canada is "not suffering from a broad-based shortage of skilled labour."[954]

Despite these assurances, many employers, particularly in small and medium-sized businesses, are experiencing otherwise. According to HRDC, results of employers' surveys often suggest that skill shortages are dramatic. However, trend lines are difficult to construct from these employer surveys, because they are typically one-time only affairs, and are not repeated. Also, according to the HRDC analyses, employers' answers often do not reflect serious problems. For example, in a 1995 survey in Quebec, 75% of

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[950] In 2000, the CFIB reported that a total of 250,000 to 300,000 jobs were unfilled. Pannozzo, and Colman. *Working Time and the Future of Work in Canada: A Nova Scotia GPI Case Study*, accessed. p. 431.
[951] Ibid., accessed. p. 431. Original reference is Canadian Federation of Independent Business. Press Release. February 21, 2003. Available from http://www.cfib.ca/legis/novascot/5106.asp.
[952] HRDC is now called Human Resources and Social Development Canada (HRSDC).
[953] HRDC report cited in The Conference Board of Canada. *Solving the Skilled Trades Shortage*, Ottawa, Submitted to HRDC by the Conference Board of Canada, 2002; accessed September 2006; available from http://www.conferenceboard.ca/education/reports/pdfs/Skilled_trades.pdf. p. 5. Original reference is Henson, Harold, Richard Roy, and Claude Lavoie. "A Primer on Skills Shortages in Canada." HRDC. Applied Research Branch Paper. R96-8-E. 1998.
[954] HRDC report cited in Ibid., accessed. p. 5. Original reference is Masse, Philippe, Richard Roy and Yves Gingras. "The Changing Skill Structure of Employment in Canada." HRDC. Applied Research Branch Paper. R99-7-E. 1998.

the firms surveyed reported experiencing hiring difficulties due to a lack of qualified or skilled workers. However, when these results were analyzed further it was found that fewer than 10% of the firms having complained of shortages "considered the situation sufficiently serious to justify raising wages, increasing overtime of current staff, or limiting production. Moreover, a study of occupations supposedly in shortage revealed that less than 20% of them involved skilled labour." Another issue, according to the HRDC studies, is that employers often complain that their employees are not sufficiently qualified—even if they are.[955]

Pollster and political commentator, Allan Gregg argues that when it comes to projecting future skills shortages, lateral thinking is required:

> [T]o accept such straight line projections as inevitable or the forces of demography as immutable leads to a faulty assessment of the future and blinds us to alternative possibilities that may be more in keeping with the future we want […]. Members of the big generation may not work as much, or in the same jobs, but having been the central focus of society for their entire lives, it is unlikely they'll slip quietly into retirement. So, far from experiencing labour shortages, it is more likely we'll see legions of octogenarian consultants offering their services in the workplace.[956]

Despite the lack of consensus among economists about whether a skilled labour shortage is real, there is broad agreement that apprenticeship programs need "special attention" to ensure there are enough skilled workers to meet future needs.[957]

The Canadian Council on Learning (CCL) argues that there are a number of factors that point to a skill gap in Canada.[958] These factors include:

- an aging workforce: 2001 Census data show that among many of the skilled trades (with the exception of electricians) the proportion of workers aged 55 or over is greater than in the workforce as a whole. The average age within these skilled trades is also higher than for the workforce at large.

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[955] Human Resources and Skills Development Canada. *Is There a Skill Gap in Canada?*, Ottawa, HRSDC, 1998; accessed September 2006; available from http://www.hrsdc.gc.ca/en/cs/sp/hrsd/prc/publications/research/1998-000134/page07.shtml. pp. 1–2.

[956] Pannozzo, and Colman. *Working Time and the Future of Work in Canada: A Nova Scotia GPI Case Study*, accessed. p. 431. Original reference is Gregg, Allan R. "Aging is as Aging Does. Don't Expect the Baby Boomers to Slip Submissively into Old Age." *MacLean's*. Vol. 116, no. 32. August 11, 2003. Toronto. p. 44.

[957] Skof, Karl. *Trends in Registered Apprenticeship Training in Canada*, Catalogue no. 81-004-XIE, Ottawa: Centre for Education Statistics, Statistics Canada, 2006.

[958] Canadian Council on Learning. *Apprenticeship Training in Canada*, Ottawa, Canadian Council on Learning, 2006; accessed September 2006; available from http://www.ccl-cca.ca/CCL/Reports/LessonsInLearning/apprenticeship-LinL.htm.

- a disinterest among youth to enter the skilled trades: 2001 Census data show that the number of young workers available to replace retiring older workers is lower than in the overall workforce. Parents and teachers tend to have negative perceptions about occupations in the trades, and they discourage young people from pursuing a trade in favour of a university education.
- the small numbers of immigrants with apprenticeship training: in 2001, 43.4% of recent immigrants aged 25 to 44 in the labour force had either a university or college level education; only 5.4% had apprenticeship training.
- the relatively small numbers of women entering skilled trades: In 2004, only 7% of workers in transportation, trades, and construction were women. In 2003, women accounted for 9.7% of registered apprentices and 10.6% of completed apprenticeships.[959]

Data from Statistics Canada's Registered Apprenticeship Information System (RAIS)[960] show there is a relationship between apprenticeship registrations and the business cycle, which is related to the demand in skilled trades workers. Between 1991 and 2003, registrations fluctuated with demand. In 1991, there were 192,000 registered apprentices, up from the recession of the early 1980s. Numbers dropped in 1995 to 163,400, again due to the recession of the early 1990s, and then increased to 249,800 in 2003, when the economy improved.[961] [962]

However, while the number of apprenticeship registrations has increased since 1996, the number of completions has remained static. According to Statistics Canada:

> The evidence suggests that there are strong links between economic cycles and trends in registered apprenticeship numbers in Canada. The number of new registrants declined during the recession of the early 1990s. One reason may be that, during periods of slow economic growth, employers may be less willing to take on new apprentices. During periods of strong economic growth, such as the case in the late 1990s and the early 2000s, registered apprentices may find that they can land good jobs before they have completed their training, contributing to a decrease in the completion rate.[963]

Statistics Canada report other factors that help explain these overall trends, including the characteristics of apprentices themselves. For example, on average, apprentices are considerably older than students in other postsecondary institutions. According to data provided by the Canadian Council on Learning, the average age of newly registered

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[959] Ibid., accessed. pp. 1–2.
[960] The Registered Apprentice Information System is an annual survey administered by Statistics Canada to gather information on individuals who receive training and those who obtain certification within a trade where apprenticeship training is being offered.
[961] Skof. *Trends in Registered Apprenticeship Training in Canada*.
[962] Trends in both registration and completion vary depending on the trade.
[963] Skof. *Trends in Registered Apprenticeship Training in Canada*.

apprentices in 2003 was 27.6 and the average age of all apprentices was 30.1.[964] The increased family and financial responsibilities that come with age may have something to do with not completing the program.[965]

In an attempt to examine completion rates among apprentices, Statistics Canada established a pilot study, which tracked the progress of 14,000 apprentices who registered in 1992 in Ontario, Alberta, and New Brunswick. It found that in 2002 about half of the group had completed training in the trade they had chosen. Depending on the province, between 5% and 12% of the apprentices were still training in 2002—some in a new trade. The study did not analyze the reasons for non-completion, but suggested that further research should be done to look at the effect of employment opportunities, costs associated with apprenticeship training, lack of journeymen available for training apprentices, family reasons, and union jurisdictional roles.[966] [967]

In Canada, apprenticeship training formally began in 1799 with the *Education and Support of Orphan Children Act,* which was an attempt to provide "orphans, delinquents, or non-academics" with training in semi-skilled occupations.[968] Since then, this form of career training has evolved considerably, and today each province or territory has its own apprenticeship office and list of designated trades.[969]

Despite the fact that apprenticeship training and the number of designated trades has evolved and developed over the years, Canadians still tend to have a negative attitude toward apprenticeship training. According to the Conference Board of Canada, the status of the trades has been diminished over the years because trades have been treated as a "secondary career path."[970] In other words, young people graduating from high school are encouraged by their parents, teachers, and guidance counsellors to go to university or community college if they have the grades. "Other common youth perceptions are that skilled trades are cold, dirty, outdoor, seasonal, boom and bust occupations, that involve

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[964] Canadian Council on Learning. *Apprenticeship Training in Canada*, accessed. p. 3.

[965] Skof. *Trends in Registered Apprenticeship Training in Canada*.

[966] Statistics Canada. "Study: A Decade-Long Look at Registered Apprentices." *The Daily*, Statistics Canada, November 22, 2005, accessed December 2005; available from http://www.statcan.ca/Daily/English/051122/d051122b.htm.

[967] Of the 14,000 apprentices included in the pilot study, 8,300 were from Ontario, 4,800 from Alberta, and 900 from New Brunswick. The total represented about half of all individuals who registered as an apprentice in 1992.

[968] Nova Scotia Labour Force Development Board. *Innovative Approaches to Apprenticeship Reform in Nova Scotia*, Dartmouth: NS Labour Force Development Board, 1995. p. 2.

[969] For example, in Nova Scotia, there are currently 55 trades listed by the Apprenticeship Training and Skill Development Division of the provincial Department of Education. This is up from only 33 trades listed in 1995. By contrast, in Germany there are over 450 careers to choose from when considering an apprenticeship. Nova Scotia Department of Education. *Apprenticeship. Frequently Asked Questions*, accessed. Nova Scotia Labour Force Development Board. *Innovative Approaches to Apprenticeship Reform in Nova Scotia*.

[970] The Conference Board of Canada. *Solving the Skilled Trades Shortage*, accessed. p. 3.

repetitive work, low job satisfaction, and little imagination for even less compensation."[971]

Although many of the skilled trades do not fit this description, results of Statistics Canada's National Graduate Surveys indicate that some of this negativity is based in reality. Trade and vocational graduates generally do less well in the labour market when compared to university or community college graduates—that is, they have higher rates of unemployment and lower earnings. The surveys also indicate that trade or vocational graduates are much less likely to be working in a field that uses their training.[972, 973]

In addition to these negative perceptions, there are many barriers and obstacles facing those who are interested in pursuing apprenticeship training. In 2004, the Canadian Apprenticeship Forum (CAF) released an "accessibility" report, which looked at the key barriers facing individuals seeking apprenticeship training. According to the study, there was a general lack of information and awareness about apprenticeship programs. For example, many youth are unaware of the range of occupations that the skilled trades offer in Canada.[974] The Conference Board of Canada also noted that many teachers and guidance counsellors still regard trades as "best suited for students who have difficulty achieving academically and do not recommend them as first choices for students who achieve at relatively higher levels of performance."[975]

The CAF report also identified the cost associated with apprenticeship training to individuals, employers, and unions, as another significant barrier. Currently, according to CAF, there is "no solid research" that shows what it will cost individuals or employers to be involved in these programs. "Anecdotal evidence suggests that employers may assume a large part of the cost of apprenticeship training, but until we can confirm this with solid facts and figures we are all simply speculating."[976]

In 1995, the Nova Scotia Labour Force Development Board cited several barriers facing women who want to access apprenticeship training, including women's unfamiliarity with trades, negative attitudes, limited education, mobility problems, a lack of socialization, and sexual harassment.[977]

In 2004, Bob Rae, former premier of Ontario, headed up a panel to look at postsecondary

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[971] Ibid., accessed. p. 13.

[972] Ibid., accessed. p. 3. Based on Statistics Canada's National Graduate Surveys of 1984, 1988, 1992, and 1997.

[973] The Canadian Apprenticeship Forum also cited "negative attitudes" among youth and their parents as one of the key barriers facing would-be apprentices. Herod. "Removing the (Perceived) Barriers to Apprenticeship Training." p. 54.

[974] Ibid. p. 54.

[975] The Conference Board of Canada. *Solving the Skilled Trades Shortage*, accessed. p. 14.

[976] Herod. "Removing the (Perceived) Barriers to Apprenticeship Training." p. 54.

[977] Nova Scotia Labour Force Development Board. *Innovative Approaches to Apprenticeship Reform in Nova Scotia.*

education in Ontario and began a series of public consultations, which would culminate in a report the following year. He and the seven-member advisory panel heard from dozens of interested parties and received hundreds of submissions regarding the needs of the higher education system in Ontario.[978]

The "Rae Review"—as it became known—made a number of recommendations about postsecondary education in Ontario, and one dealt specifically with apprenticeship:

> Recognize apprenticeship as a postsecondary destination, and treat the apprenticeship programming delivered by colleges as a core business. Assign to colleges the government's role in administration and outreach to employers (for those apprenticeship programs in which colleges deliver in-school training).[979]

The report also noted that there were many "obstacles and barriers" facing high school students who are interested in apprenticing, including lack of "readily available" information, and a complicated process, especially when compared to the ease with which students apply to universities.[980]

The daunting process associated with pursuing apprenticeship training was also noted by the Conference Board of Canada report:

> Lack of clearly defined, well mapped out and thoroughly articulated career paths limits entry in the skilled trades to the relatively small number of people who can navigate a very disjointed system of institutional gateways. The majority will choose, instead, clearer and more direct routes into other professions competing for their attention. [981]

The Rae Review also recommended colleges be responsible for the entire apprenticeship application and intake process, including the process of matching an apprentice up with an employer.

In addition to the barriers facing would-be apprentices discussed above, Sharpe and Gibson also note that there are barriers facing employers: "[t]he market for apprenticeships is principally constrained by employer demand rather than by the supply of potential apprentices.[982]

The CCL argues that apprenticeship growth depends on the willingness of employers to register apprentices. "Employers tend to be reluctant to take on apprentices because they

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[978] Rae, Bob. *Postsecondary Review. Higher Expectations for Higher Education. Report and Recommendations*, Toronto: Ontario Ministry of Education, 2005.

[979] Ibid. p. 29.

[980] Ibid. p. 50.

[981] The Conference Board of Canada. *Solving the Skilled Trades Shortage*, accessed. p. 15.

[982] Sharpe and Gibson cited in Canadian Council on Learning. *Apprenticeship Training in Canada*, accessed. p. 4.

perceive the investment in training to be risky and slow to return a benefit."[983] However, the CCL points to a report by the Canadian Apprenticeship Forum, which found that returns on investments in apprenticeship training were realized sooner than employers expected. The study concluded that for every dollar employers invested in apprenticeship training they realized an average benefit of $1.38.[984]

7.3.2 Apprenticeship training programs in Europe

According to a number of studies, Canada is relatively underdeveloped compared to Europe when it comes to apprenticeship training programs.[985] Sharpe and Gibson summarize the difference between national apprenticeship systems this way:

> Anglo-Saxon systems are market-driven, where firms are not committed to supplying apprenticeship sponsorship. In contrast, Northern European systems rely upon social partnership between business and labour interests where the supply of apprenticeship sponsors are based on industry consensus. With respect to educational systems, Anglo-Saxon models do not emphasize vocational education in their secondary school systems and apprenticeship is generally less integrated with the formal education system than in Northern European models. Finally, the labour market outcomes for those who complete apprenticeship programs are clear in Northern European systems, where completers face substantial but narrow employment opportunities. In contrast, labour market entry into occupations in the Anglo-Saxon systems is not as restricted and thus apprentices have a broader range of employment possibilities.[986]

According to Sharpe and Gibson, Canada falls within the Anglo-Saxon model of apprenticeship training, with a market-driven supply of sponsors. They note that it remains unclear whether the Northern European model is applicable to Canada, as long as Canada does not have the social partnerships and regulated labour markets that characterize the Northern European countries. Sharpe and Gibson do suggest that despite this, even limited institutional reform, which occurred in Ireland, can "greatly enhance performance registrations."[987]

According to the CCL, many European countries use financial incentives to encourage employers to take on apprentices. For example:

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[983] Ibid., accessed. p. 4.
[984] Ibid., accessed. p. 4.
[985] Sharpe, Andrew, and James Gibson. *The Apprenticeship System in Canada: Trends and Issues*, Ottawa: Centre for the Study of Living Standards, CSLS Research Report, 2005.; and Nova Scotia Labour Force Development Board. *Innovative Approaches to Apprenticeship Reform in Nova Scotia*.
[986] Sharpe, and Gibson. *The Apprenticeship System in Canada: Trends and Issues*. pp. 38–39.
[987] Ibid. p. 39.

[I]n France, firms must either pay a training levy or spend 1.5% of the value of their payrolls on employee training (including but not limited to apprenticeship training). In Australia, firms are offered apprenticeship training incentives ranging from $1,750 per year to $7,000 over two years. In Norway, educational reforms in the 1990s included provisions to encourage employers to take on young apprentices, including cash bonuses when apprentices successfully complete their final trade examinations.[988]

Germany is considered to have the largest and the most comprehensive and detailed regulatory system for apprenticeship training in the Western world. In 2002, roughly 1.6 million apprentices were registered in Germany, nearly 5% of the labour force aged 15 to 54. In 1997, 46% of 18-year old males and 36% of 18-year old females participated in apprenticeships, "evidence of both the widespread participation and the striking amount of gender equity relative to other systems."[989] By contrast, in Canada in 2002, 234,000 apprentices were registered, or 1.6 % of the labour force aged 15 to 54.[990]

In the German system, secondary education is differentiated at the age of 10 into three tracks that prepare students for trades, commerce, or university. Germany, like most systems of national apprenticeship, places the responsibility for finding an employer with the apprentice. However, the difference is that Germany "places a great deal of resources into structuring this search to render it both coherent and transparent."[991] In addition, young Germans are offered significant incentives to become apprentices, including favourable wage differentials and higher social status associated with completed apprenticeships. This is in stark contrast to the negative views associated with work in the trades in Canada.

The ways in which apprenticeship training is supported in Germany is beyond the scope of this current literature review. However, it does merit mentioning that understanding the ways in which German and other European systems support and encourage apprenticeship training would be invaluable in informing policy pertaining to the apprenticeship system in Canada, and perhaps Bhutan.[992]

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[988] Canadian Council on Learning. *Apprenticeship Training in Canada*, accessed. p. 4.
[989] Ibid., accessed. p. 4.
[990] Sharpe, and Gibson. *The Apprenticeship System in Canada: Trends and Issues*. p. 26.
[991] Ibid. p. 27.
[992] For more information on the German system please refer to Ibid. pp. 26–29. Sharpe and Gibson also explore the national apprenticeship systems of France, Ireland, Great Britain, United States, and Australia.

8. Informal Learning

> *Never let school interfere with your education.*
> Mark Twain[993]

The general public often thinks of lifelong learning as lifelong "schooling." David Livingstone of the Centre for Study of Education and Work at the University of Toronto, and a major researcher in the fields of learning and work and informal learning, found that when people were asked about their learning without explaining the term, they would mark "not applicable" if they were not enrolled in a course or program.[994] However, as one researcher recalls, if you ask any group of people whether they learned the most important things in their lives *in* school or *out* of school, most people say "out of school."[995] Formal schooling is a finite part of one's life, but informal learning never ends—it lasts a lifetime.

Much of what we know, however, we have learned outside formal school settings: cumulatively over an extended period of time; in concert with friends, colleagues, or relatives; in a variety of contexts—such as the workplace, community, church, library, and home; through a variety of activities, including leisure (such as reading books or using the Internet) and physical activities; and by attending cultural events or civic / community meetings. Boekaerts and Minnaert note that research on informal learning is mostly focused on three sources:

1. learning from family members, peers, significant others, or experts in the field
2. learning in informal environments such as museums, galleries, science centers, parks, and zoos
3. learning from mass media such as television, video, or the internet[996]

Livingstone calls what we know about informal learning the "tip of the iceberg."[997] Information on learning that ignores this aspect provides a very limited view of knowledge and learning within society and gives both policy makers and employers a distorted view of what is needed in terms of education and skills. Knowledge of informal learning places the needs of the learner in a more prominent position than the common

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[993] Twain, Mark/Samuel L. Clemens (1835-1910). *Quips and Quotes*, Key Curriculum Press, n.d.; accessed January 2007; available from http://www.keypress.com/x2816.xml. This statement is frequently quoted and attributed to Mark Twain. However, the source of the quote is never stated and, as the "Quips and Quotes" website concludes, the attribution is questionable.
[994] Livingstone, David cited in Myers. *Building Community Learning Capacity: Utilizing Community Learning Assets*, accessed.
[995] Ibid., accessed.
[996] Boekaerts, and Minnaert. "Self-Regulation with Respect to Informal Learning ".
[997] Livingstone. *Mapping the Iceberg*, accessed.

practice of trying to fit the learner into particular structures that may or may not include knowledge necessary to the learner's purpose.

Livingstone defines informal learning and suggests that outcomes must be determined by the individual or group of learners:

> Informal learning is any activity involving the pursuit of understanding, knowledge or skill, which occurs outside the curricula of educational institutions, or the courses or workshops offered by educational or social agencies. The basic terms of informal learning (e.g., objectives, content, means and processes of acquisition, duration, evaluation of outcomes, applications) are determined by the individuals and groups who choose to engage in it. Informal learning is undertaken on one's own, either individually or collectively, without either externally imposed criteria or the presence of an institutionally authorized instructor.[998]

Debate in the literature includes the key concept of whether or not informal learning should be classified as intentional. Daniel Schugurensky, of New Approaches to Lifelong Learning (NALL) at the University of Toronto, writes that the term, "informal learning," is broad and includes different types of learning that are often conflated.[999] He developed a taxonomy of informal learning that includes two main categories and three types of learning. The two main categories are **intentionality** and **consciousness or awareness,** and types of informal learning can be either or both. Learning is intentional if the individual or group has a goal of learning something before the learning begins. It is conscious if the individual or group is aware of having learned something, whether this awareness happens within or after the learning process.

Schugurensky's three types of informal learning include learning that is **self-directed**, **incidental**, or acquired through **socialization**.

Self-directed learning is both intentional and conscious. Examples might include learning undertaken to learn more about an historical event, how to make a special dish for dinner, or how to get a street paved.

Incidental learning is not intentional but is conscious. This is often related with experiential learning. In this case, the individual or group did not realize learning was taking place at the time, but realizes it after the fact. This could be as simple as learning that by touching a hot stove, you will burn your hand, or as complex as learning about

[998] Livingstone, David W. . "Exploring the Icebergs of Adult Learning: Findings of the First Canadian Survey of Informal Learning Practices," *Canadian Journal for the Study of Adult Education*, vol. 13, no. 2, 1999: 49-72.

[999] Schugurensky, Daniel. *The Forms of Informal Learning: Towards a Conceptualization of the Field. NALL Working Paper #19*, Toronto, The Research Network on New Approaches to Lifelong Learning (NALL), Ontario Institute for Studies in Education (OISE), University of Toronto, 2000; accessed April 2005; available from http://www.oise.utoronto.ca/depts/sese/csew/nall/res/index.htm.

environmental pollution or sustainability by participating in a community clean-up or bird watching project.

Michael Eraut from the University of Sussex, U.K., argues that specific learning experiences are generated by the flow of experience and become meaningful when they are brought into awareness and reflected upon. He notes: "The 'act of attention' brings experiences, which would otherwise simply be lived through, into the area of conscious thought."[1000] Eraut also reports learning can occur rapidly when people assess situations by recognizing patterns, or by drawing on their intuitive understanding of the situations.[1001]

Socialization is often referred to as **tacit learning** and includes the "internalization of values, attitudes, behaviours, skills, etc. that occur during everyday life."[1002] There is no intention to acquire new knowledge, and often there is no awareness that learning has taken place. This type of learning is embedded within cultural contexts, and activities not directly concerned with learning; it could include unacknowledged attitudes of gender bias or racism, for example. This type of knowledge is ingrained in everyday practices that are taken to be objective reality rather than as arising from a process of learned socialization. The socialization process, however, can become conscious through a "process of retrospective recognition."[1003] By getting to know people from other cultures, for example, the individual can become aware of her or his own socially constructed biases and come to appreciate other worldviews. This recognition process can be either externally led or generated internally. Information concerning this type of learning might be found in public opinion polls or surveys.

Boekaerts and Minnaert list ten comprehensive attributes of informal learning that were identified from a content analysis of recent resources in the literature about informal versus formal learning characteristics. The ten attributes contrast markedly:

1. The learning process is described as active, voluntary, self-discovering, self-determined, open-ended, non-threatening, enjoyable, and explorative.
2. Learners use a number of self-regulatory processes spontaneously, such as self-initiating learning and self-monitoring their progress.
3. These self-regulatory processes make an explicit appeal to intrinsic motivation; conversely, intrinsic motivation facilitates self-regulatory processes.
4. Most informal learning is embedded in a social context, meaning that social cues are highly relevant and that students engage in cooperative learning activities. These socially situated learning activities are loosely structured, learner directed,

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[1000] Eraut, Michael. "Informal Learning in the Workplace," *Studies in Continuing Education*, vol. 26, no. 2, 2004: 247-274.
[1001] Ibid.
[1002] Schugurensky. *The Forms of Informal Learning: Towards a Conceptualization of the Field. NALL Working Paper #19*, accessed.
[1003] Ibid., accessed.

and mediated by peers who often share the same values, attitudes, interests, and beliefs.

5. Informal learning situations utilize (realistic) objects, materials or settings that are highly contextualized.

6. The learning experience is more qualitative than quantitative, more process oriented than product oriented, more synthetic than analytic, and more flow-driven.

7. Time allocation in informal learning episodes is unhurried in nature, self-paced, and open-ended with relatively few time constraints.

8. Even when there is a kind of curriculum (e.g., a path in a museum to discover the life patterns of the ancient Greeks), it is a flexible one, signifying that the structure is non-linear and bottom-up.

9. There is no compulsory, individual testing or assessment procedure, but rather a collective, informal type of assessment or self-assessment based on feedback.

10. Set goals tend to be broader which may result in considerable variability in what gets learned.[1004]

For Livingstone, the key criterion for distinguishing informal learning from other everyday activities is "having gained a new significant form of knowledge, understanding or skill on your own initiative that you retain long enough to recognize it retrospectively."[1005] The learning must be conscious, and identifiable by the learners:

> Explicit informal learning is distinguished from everyday perceptions, general socialization, and other tacit learning by peoples' conscious identification of the activity as significant learning. The important criteria that distinguish explicit informal learning are the retrospective recognition of both a new significant form of knowledge, understanding, or skill acquired on one's own initiative and also recognition of the process of acquisition. This guideline distinguishes explicit informal learning from all of the other tacit forms of learning through everyday activities.[1006]

In another report, Livingstone says that "at the end of the day" what matters is the outcome of whether the person or group feels they have accomplished some new knowledge, understanding, or skill, rather than whether or not the learning was intentional.[1007]

[1004] Boekaerts, and Minnaert. "Self-Regulation with Respect to Informal Learning ".

[1005] Livingstone, David W. *What Is Informal Learning*, Toronto, The Research Network on New Approaches to Lifelong Learning (NALL), Ontario Institute for Studies in Education (OISE), University of Toronto, 1999; accessed April 2005; available from http://www.oise.utoronto.ca/depts/sese/csew/nall/inflearn.htm.

[1006] Livingstone. "Exploring the Icebergs of Adult Learning: Findings of the First Canadian Survey of Informal Learning Practices."

[1007] Livingstone. *What Is Informal Learning*, accessed.

8.1 Measurement of informal learning in Canada

Research to date on informal learning includes the process of learning, the areas and activities of learning, and the amount of time participating in these activities. Very little research has focused on the actual knowledge outcomes.[1008] The Centre for the Study of Education and Work (CSEW) at the Ontario Institute for Studies in Education (OISE) of the University of Toronto is working on developing a coordinated national framework for documenting adult formal and informal learning trends through national surveys.[1009]

Through the work of the research networks of New Approaches to Lifelong Learning (NALL) and the Work and Lifelong Learning (WALL) program at CSEW, Canada is one of the leaders in the field of measuring informal learning. The two surveys taken to date include questions asking the respondents to identify what they learned informally. The Adult Education and Training Survey (AETS), administered as a supplement to Statistics Canada's Labour Force Survey, also has elements related to work-related informal learning, as does the International Adult Literacy and Skills Survey (Canadian component) which we have discussed.

8.1.1 Canadian Survey of Informal Learning

NALL surveyed 1,500 Canadian adults in 1998 in the first large-scale survey of Canadian adult learning activities. The survey, discussed briefly in Chapter 6 of this review, contained questions on the full-range of learning activities in formal, nonformal, and informal modes, with a focus on informal learning. According to Livingstone, it "provides benchmarks of the incidence, thematic contents, and processes of explicit informal learning; of the relations between informal learning and formal schooling and further education; and of the relations of all these learning activities with the social background of Canadian adults."[1010] Although not reported in the findings examined, the questionnaire, which is available on the NALL website (http://www.nall.ca), does ask respondents to describe the skills or knowledge gained through informal learning as well as how important or useful the knowledge is.[1011]

In the informal mode, the survey assesses participation in informal learning and common learning activities in four areas.

Workplace—new job task; computers; other new technologies or equipment; supervisory or management skills; team work, problem solving, or communication skills; employee

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[1008] Ibid., accessed.
[1009] Livingstone. "Expanding the Field of Adult Education Research in Canada."
[1010] Livingstone. "Exploring the Icebergs of Adult Learning: Findings of the First Canadian Survey of Informal Learning Practices."
[1011] Research Network on New Approaches to Lifelong Learning (NALL). *Website*, accessed.

rights and benefits; occupational health and safety; literacy and numeracy skills; another language; and any other employment-related informal learning activities.

Community volunteer activities—fund-raising; organizational or managerial skills; social issues; communication skills; interpersonal skills; other technical skills; other skills or knowledge.

Home—home maintenance; home cooking; cleaning; child or elder care; shopping for groceries, clothes, etc.; home renovation and gardening; home budgetting; other household tasks.

Other general interest—sports or recreation; practical skills; cultural traditions or customs; leisure or hobby skills; social skills and personal development; health and well being; finances; computers or computer skills; language skills; science and technology; intimate relationships; religion or spirituality; environmental issues; pet care; public and political issues; other informal learning not directly related to employment, community activities or housework.[1012]

In the general interest category, the survey found that 75% of the respondents were involved in learning about health and wellbeing, 60% of respondents were involved in learning about environmental issues, and over 50% of respondents were involved in learning connected with hobby skills, public issues, computers, social skills, and sports and recreation.

8.1.2 The National Survey on the Changing Nature of Work and Lifelong Learning (WALL)

The 2004 National Survey on the Changing Nature of Work and Lifelong Learning (WALL), also known as the National Survey of Learning and Work, surveyed 9,663 adult Canadians. It includes questions from the NALL survey but goes further. WALL was designed to answer three basic questions:

1. What are the current forms, contents, and outcomes of the array of learning activities of Canadian adults?
2. How have changes in the nature of paid and unpaid work in the past five years been associated with changes in adults' learning practices?
3. What differences are there in these learning and work relations between social groups and especially between socially disadvantaged groups and others?[1013]

[1012] Livingstone. *Mapping the Iceberg*, accessed.
[1013] Livingstone. *Exploring the Changing Nature of Work and Lifelong Learning: Preliminary Findings of a Canadian National Survey*, accessed.

A report on the preliminary findings of the survey, based on the first 6,000 respondents, show that the incidence of intentional, informal learning activities of employed persons has declined from 15 hours per week in 1998 to 12 hours per week in 2004, although over 95% of employed persons identified participation in some form of informal learning. This included informal job-related learning (85% of employees), general interest-related learning (80% of employees), housework related learning (75% of employees), and volunteer-related learning (30% of employees). Participation in informal learning activities is substantial in all social groups regardless of age, formal schooling, employment, or occupational status. By contrast, those with a higher level of formal education tend to participate in more nonformal learning activities, such as taking structured courses. There are also financial and time barriers that limit access to adult education courses for persons with low income.[1014] The final report published in 2005 confirms these results.[1015]

[1014] Ibid., accessed.

[1015] Livingstone, David W. *Basic Findings of the 2004 Canadian Learning and Work Survey*, Toronto, The Research Network on the Changing Nature of Work and Lifelong Learning (WALL), The Centre for the Study of Work and Education (CSWE) at the Ontario Institute for Studies in Education (OISE), University of Toronto, 2005; accessed July 17 2006; available from http://www.wallnetwork.ca/resources/WALL_Survey_Findings05.pdf.

9. Informal Learning in Cultural Environments

According to Dick Stanley of the Department of Canadian Heritage, in his work, *Developing Indicators of the Social Effects of Culture*, two main perspectives can basically summarize the multiple definitions of culture. The first defines culture broadly as:

> … the set of symbolic resources people use to make sense of the world around them and to enable them to interact with each other. Culture in this perspective includes the ideas, values, and systems of belief people hold, the norms and social rules they live by, the languages and protocols they use to relate to each other, as well as their patterns of behaviour and the material products they create."[1016]

The second perspective views culture more narrowly as "the activity of aesthetic creation and expression and its products, in other words, the creative and performing arts."[1017] Stanley, however, finds that both of these definitions are two perspectives on the same body of knowledge:

> If culture is thought of as a stock of knowledge individuals use to interpret the world around them (the first perspective), then the second perspective, aesthetic creation and expression, is the source of that stock of knowledge, the process by which all the knowledge was originally created and from which flows new knowledge and new ways of interpreting the world […]. A society must continuously refresh and update its stock of symbolic resources (i.e. ensure cultural diversity) if it is to cope with rapidly changing world circumstances and phenomena"[1018]

In this literature review, we look at both aspects of cultural literacy, which, as pointed out above, are two sides of the same coin. Part IV is specifically concerned with the first perspective, and, in particular, it discusses "core knowledge" and multicultural literacy. Here we look at participation in cultural activities as a key form of informal learning, which represents the second perspective, although we do not look at creativity *per se.*

We have specifically included participation in cultural activities, such as visiting museums and libraries, since cultural venues are recognized as being sources, or

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[1016] Stanley, Dick. *Beyond Economics: Developing Indicators of the Social Effects of Culture*, International Symposium on Culture Statistics, UNESCO Institute for Statistics and Observatoire de la culture et des communications du Quebec, Institut de la Statistique du Quebec, pp. 131-144, 2002; accessed August 2005; available from http://www.colloque2002symposium.gouv.qc.ca/h4v_page. p. 132.
[1017] Ibid., accessed. p. 132.
[1018] Ibid., accessed. p. 132.

environments, of informal learning.[1019] Potential outcomes of participating in cultural and heritage environments include learning new knowledge and acquiring new skills. The Treasury Board of Canada Secretariat's 2004 annual report to Parliament notes that participation in cultural activities—which includes library and media use, attending cultural events such as performing arts, and visiting cultural institutions such as museums—expands people's knowledge, experiences, ideas, and understanding of diverse social and cultural groups.[1020] In particular, the Cultural Heritage Consortium notes that library use and visiting museums and other heritage institutions are strongly associated with learning.[1021] Some of these institutions are associated with universities, scholarship, and research, while others are publicly oriented institutions that support lifelong learning and especially informal learning.

The Canadian Council on Learning (CCL) uses participation in cultural activities as a proxy for learning in two of its 16 Composite Learning Index (CLI) indicators. It does this by measuring spending on cultural activities, to indicate "learning to be," by using the percentage of households who report spending on performing arts, and the percentage of households with spending on visiting museums.[1022] As we discuss in the following section, this approach actually tells us very little about learning. However, participation in culture activities does at least imply an interest in the activity, and might possibly indicate that learning has occurred. In any case, cultural activities do represent potential informal learning environments.

9.1 Culture participation statistics

Economic data are strongly represented in culture statistics. The main categories of spending on culture include operating expenditures, capital expenditures, and grants and contributions.[1023] As Statistics Canada notes: "Most of the federal cultural budget is devoted to key culture industries, which include broadcasting, the film and video industry, book and periodical publishing and the sound recording industry."[1024] In

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[1019] Treasury Board of Canada Secretariat. *Canada's Performance 2004: Annual Report to Parliament*, Treasury Board, 2004; accessed October 2005; available from http://www.tbs-sct.gc.ca/report/govrev/04/cp-rc_e.asp.

[1020] Ibid., accessed.

[1021] Cultural Heritage Consortium. *Impact Evaluation of Museums, Archives and Libraries: Quantitative Time Series Data Identification Exercise*, Resource: The Council for Museums, Archives and Libraries (U.K.), 2002; accessed August 2005; available from http://www.mla.gov.uk/resources/assets//I/id18rep_doc_6168.doc.

[1022] Canadian Council on Learning (CCL). *Website*, accessed.

[1023] Statistics Canada. "Government Expenditures on Culture." *The Daily*, October 31, 2005, accessed Jnauary 2007; available from http://www.statcan.ca:80/Daily/English/051031/d051031b.htm.

[1024] Ibid.

2003/04, nearly three-quarters of total federal spending on culture industries went to broadcasting.[1025]

However, as Jeff Dayton-Johnson of Dalhousie University notes, these types of statistics do not capture the contribution of culture to "social goods" such as social cohesion and the formation of national identity.[1026] As well, he posits that use of domestic cultural products creates "unrecognized externalities" such as:

- cross-product externalities—where "consumption of one domestic cultural product (e.g., visiting a heritage site) raises the value of the consumption of other domestic cultural products (e.g., reading a historical novel set at that site)"
- intergenerational externalities—where "support of today's production contributes to the 'dense and diversified' cultural base necessary for future domestic cultural production"[1027]

In addition to economic dimensions of the "creative flow," such as revenue, costs, and employment, cultural statistics measure physical products or outputs, such as the number of books, magazines, and newspapers published; and the use of these products, such as numbers of readers, amount of library use, attendance at cultural events, and frequency of television viewing.[1028]

The aggregate output and spending statistics, however, tell nothing about the type or amount of learning that has taken place, or about outcomes or impacts on society.[1029] Since no content analysis accompanies aggregate statistics on factors like television viewing or magazine purchases, there is no distinction between output and spending on misinformation and promotion of stereotypes, values, and images such as those concerned with materialism and violence, on the one hand, and output and spending on materials that deepen knowledge and understanding, and transmit values like compassion and tolerance. User levels, however, do at least indicate interest in a particular activity, which may potentially imply learning. As previously discussed in Chapter 6, interest in a subject or activity is a factor in positive self-regulated learning.[1030] Hooper-Greenhill also

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[1025] Ibid.

[1026] Dayton-Johnson, Jeff. *What's Different About Cultural Products? An Economic Framework*, Strategic Research and Analysis, Department of Canadian Heritage, 2000; accessed August 2005; available from http://www.culturescope.ca/ev_en.php?ID=1740_201&IDZ=DO_TOPIC. p. 4.

[1027] Ibid., accessed. p. 4.

[1028] Hill, Kelly. *Government Spending on Culture in Canada, 1992-93 to 2002-03*, Canadian Conference of the Arts, 2005; accessed January 2007; available from http://ccarts.ca/en/advocacy/publications/policy/documents/KellyHillFinal_001.pdf.

[1029] Pronovost, Gilles. "Statistics in the Wake of Challenges Posed by Cultural Diversity in a Global Context: A Review of Surveys on Cultural Participation." Paper presented at the International Symposium on Culture Statistics, Montreal, October 21-23, 2002, UNESCO Institute for Statistics and Observatoire de la culture et des communications du Quebec, Institut de la Statistique du Quebec; accessed August 2005; available from http://www.colloque2002symposium.gouv.qc.ca/h4v_page.

[1030] Boekaerts, and Corno. "Self-Regulation in the Classroom: A Perspective on Assessment and Intervention."

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notes, as we discuss below, that although library use is not a learning activity *per se*, it does represent an outcome of learning.[1031]

The Canada Council for the Arts finds that both education and income are strong predictors of cultural participation.[1032] The 1992 General Social Survey (GSS) in Canada shows that higher education and / or income correlates with an increase in participation, no matter what type of cultural activity is included.[1033] The 1998 GSS also shows that the age of Canadians also has a direct bearing on their cultural participation. Persons between the ages of 45 and 59 attend cultural events such as the performing arts, visit a public art gallery, or go to a museum more often than do other age groups.[1034]

A recent literature review of cultural statistics from the International Federation of Arts Councils and Culture Agencies suggests that measuring audience numbers is an *output*, whereas measuring artistic experience is an *outcome* that can indicate a positive contribution to wellbeing. [1035] The review asserts that statistics on cultural participation do not measure artistic experiences or capture aspects of artistic activity such as the enjoyment of aesthetic experience or the exploring of emotions. In critiquing simple attendance data, the review continues:

> The practical issues can, however, become exceedingly complex. Take the […] example […] of attendances at art galleries. Assume that data indicate an increase in attendance rates. From simple door counts alone, there is often no way of telling who these people are, how long they stayed at the gallery, what they did there, how satisfying their gallery experience was, or how their experience impacted on their lives, or fulfilled any of the objectives of the country's arts policy. A measured increase in art gallery attendances per population may simply represent the same people attending more often (i.e. audience diversity has remained the same). Or these same people may even be spending less time at each visit, so the total time that they are experiencing art remains the same (i.e. cultural 'consumption' remains constant). And if, on the other hand, gallery attendance

[1031] Hooper-Greenhill, Eilean. "Measuring Learning Outcomes in Museums, Archives and Libraries: The Learning Impact Research Project (LIRP)," *International Journal of Heritage Studies*, vol. 10, no. 2, 2004: 151-174.

[1032] Canada Council for the Arts. *Overview of Key Demographic Trends - Possible Impact on Canadian Arts Attendance*, The Canada Council for the Arts, 2002; accessed August 2005; available from http://www.canadacouncil.ca/NR/rdonlyres/7ABE4A9B-798B-4262-8AFF-FD45E9A5089A/0/demographse.pdf.

[1033] Statistics Canada. *Canadian Culture in Perspective: A Statistical Overview*, Statistics Canada, Catalogue no. 87-211-XIB, 2000; accessed August 2005; available from http://dsp-psd.communication.gc.ca/Collection-R/Statcan/87-211-XIB/87-211-XIB-e.html.

[1034] Ibid., accessed.

[1035] Madden, Christopher. *Statistical Indicators for Arts Policy: Discussion Paper*, International Federation of Arts Councils and Culture Agencies (IFACCA), 2004; accessed September 2005; available from http://www.ifacca.org/FILES/StatisticalIndicatorsArtsPolicy.pdf.

rates are declining, why are people not going? Indicators based on door counts do not answer this question.[1036]

Gilles Pronovost criticizes culture data, stating that participation data often reflect a cultural bias—measuring "elite" activities such as attendance at classical music concerts and theatre performances.[1037] He notes that museums are mentioned on a regular basis on surveys, but activities that may have similar impacts, such as the contemplation of nature, which he remarks does have policy implications, are not included. He also notes that people tend to overestimate attendance at "noble" activities, such as theatre and symphony orchestra performances, and underestimate other "less noble" activities, such as television viewing time. Pronovost also observes, however, that there has been a general effort internationally to include mass media venues such as television viewing and popular music listening in culture surveys.[1038]

In comparing French and U.S. surveys, Pronovost reports that the French surveys are more detailed:

> French surveys, for example, are often more detailed about kinds of reading, both novels and magazines, the social context of reading, television viewing (type of program, identification of some of them), choice of films, knowledge about certain well-known people, some amateur practices, the use of the Internet; they also broach the subject of "outings" and receptions. In the United States, one of the more interesting and original modules involves cultural participation through the intermediary of the media, while another module involves socialization to culture.[1039]

The Cultural Heritage Consortium in the U.K. offers some suggestions on how to upgrade cultural participation data.[1040] For example, it recommends more detailed survey questions such as asking what topics were inquired about at libraries; how the new information was used; whether the information gained was for educational, business, or professional purposes; if the activity was a useful and enjoyable learning experience; if new interest or understanding in a subject was gained after a museum visit; and if the person was satisfied with what he or she experienced or received.[1041] This would allow greater content analysis and finer analysis than is presently possible with most aggregate participation data.

[1036] Ibid., accessed. p. 20.
[1037] Pronovost. "Statistics in the Wake of Challenges Posed by Cultural Diversity in a Global Context: A Review of Surveys on Cultural Participation."
[1038] Ibid.
[1039] Ibid. p. 313.
[1040] Cultural Heritage Consortium. *Impact Evaluation of Museums, Archives and Libraries: Quantitative Time Series Data Identification Exercise*, accessed.
[1041] Ibid., accessed.

Culture education data—which includes enrolment in fine arts schools in universities, and in arts and culture-related post-secondary technical and vocational schools can provide information on formal education related to cultural activities. Also, in terms of "knowledge creation," it is useful to look at the creation of, and training for, cultural products, such as written and published works, newspapers, and television and film.

However, there are no ideal data sources that can provide information on informal learning in this area. Despite the caveats noted above, cultural participation data can serve as possible proxies for informal learning, in lieu of more direct indicators. Because of their potential connection to informal learning, this literature review briefly surveys some of the cultural participation data available for this use in the West including television viewing habits; reading habits; use of libraries, heritage and historic sites, zoos, botanical gardens, art galleries, and museums; and attendance at theatres, concerts, and cinemas.

These data are not ideal for this purpose, and no doubt the Bhutanese will have other possibilities for indicating informal learning that may be more suited to their cultural environments. However, the Western examples are included here for information purposes that may shed some light on the topic of informal learning related to cultural goods and services.

9.1.1 Importance of libraries as learning environments

Libraries and museums are lifelong learning resources that provide cultural and economic benefits. In the U.K., a 2003 study of the British Library (BL) was the first evidence-based assessment of the direct and indirect economic impact of the BL on the U.K. economy.[1042] The study found:

> [F]or every £1 of public funds the Library receives, it generates over £4 of value to the U.K. economy. In addition, the findings show that the Library adds £363 million of value each year—£304 million indirectly and £59 million directly—and that, without the Library, the U.K. would lose £280 million of economic value a year."[1043]

However, libraries provide more than economic value to society. In 1997, Fitch and Warner produced a seminal work reviewing Canadian public library studies, *Dividends:*

[1042] Spectrum Strategy Consultants. *British Library: Measuring Our Value*, The British Library, 2004; accessed September 2005; available from http://www.spectrumstrategy.com/new/Pages/GB/perpectives.html. The study used the Contingent Valuation technique supported by Nobel Prize winning economists Kenneth Arrow and Robert Solow, which measures the size of the "consumer surplus" and "permits a coherent quantitative evaluation of the total benefit to the nation of publicly-funded institutions and programmes."

[1043] British Library Press & Public Relations. *£363 Million a Year Knowledge Dividend to U.K. Economy - U.K. National Library Reveals Results of Ground-Breaking Research*, The British Library, 2003, Dec. 10; accessed September 2005; available from http://www.bl.uk/cgi-bin/press.cgi?story=1399;mode=print.

The Value of Public Libraries in Canada, which explored the impact of public libraries on communities in Canada.[1044] It found that libraries improve education and literacy, help to construct and strengthen community and Canadian culture, provide information resources including access to the Internet, support the cultural industry sector by purchasing books, periodicals, newspapers, and audio-visual materials, and stimulate the local economy.[1045]

Hooper-Greenhill notes that library use is not a learning activity *per se*, but that it does represent an outcome of learning. For example:

> In order to borrow a book from a library, you have to understand the purposes of a library, know how to manage the cataloguing system, be able to negotiate the social relationships involved, assess and satisfy your own needs. You also need a grasp of your own responsibilities as a borrower, including how to look after a book and when to return it. These activities represent considerable learning over time.[1046]

Schrader and Brundin report that libraries also contribute to the quality of life "by making the records of human culture available to a wide range of the general public."[1047] They continue:

> The research undertaken for the National Core Library Statistics Program makes it evident that the people of Canada are voracious and eager consumers of library expertise, services, and collections […]. The research […] reveals the profound impact that libraries and library staff have on the cultural fabric and economic infrastructure of Canadian society. Together, these institutions and people add both measurable and immeasurable value to the cultural and economic life of Canadians."[1048]

Another study, by Kathryn Barker, discussing lifelong learning in Canada, found that libraries "contribute to the acquisition and improvement of personal skills, competence and knowledge and foster personal creativity, motivation, confidence and self-improvement—skills needed for the economy of the 21st century."[1049]

[1044] Fitch, Leslie, and Jody Warner. *Dividends: The Value of Public Libraries in Canada*, The Library Action Committee of the Book and Periodical Council, 1997; accessed August 2005; available from http://www.nald.ca/fulltext/dividend/cover.htm.

[1045] Ibid., accessed.

[1046] Hooper-Greenhill. "Measuring Learning Outcomes in Museums, Archives and Libraries: The Learning Impact Research Project (LIRP)." p. 166.

[1047] Schrader, Alvin M., and Michael R. Brundin. *National Core Library Statistics Program. Statistical Report, 1999: Cultural and Economic Impact of Libraries on Canada*, Library and Archives Canada, 2002; accessed August 2005; available from http://www.lac-bac.ca/obj/r3/f2/02-e.pdf. p. vi.

[1048] Ibid., accessed. pp. vi–vii.

[1049] Barker. "Lifelong Learning in Canada: Visions for the Future." p. 9.

Libraries also provide information to help people make personal decisions on important issues concerning health, personal development, employment, and family matters. In 1997, the Fitch and Warner study mentioned above found that Canadians use the library an average of 1.2 times per capita annually to solve day-to-day problems related to travel and shopping, 1.1 times per capita annually to address a personal / family crisis, and 1.6 times per capita annually to find information for self-help or hobbies.[1050]

A 1995 Ontario survey found that 92% of respondents thought public libraries are either very important or fairly important in furthering the education of adults after their formal schooling has been completed.[1051] And a 1996 Nova Scotia survey, which asked respondents to select the most important role of a public library, found that 40% of Nova Scotians chose the role of educational support centre, and 20% saw the library primarily as a centre for research and reference.[1052]

In addition, data collected in Canada count the number of questions librarians are asked by the public. Library users ask librarians questions on topics about which they are interested in learning, and presumably some learning takes place in this exchange.[1053] According to Fitch and Warner, librarians in the more than 35 large urban public library systems in Canada answer well over 16 million questions each year.[1054] They note that questions come from Canadians of every age, background and interest level, and are on every conceivable subject. The Cultural Heritage Consortium in the U.K. states that measures of questions to librarians can provide a partial measure of impact, or of the potential to generate impact, of library use on society.[1055]

Library and Archives Canada, the 2004 successor to the National Library of Canada and the National Archives of Canada, recognizes that it must move from a service-centred organization to a lifelong learning centre. Its 2003/4 report to the Treasury Board of Canada notes:

> Canadians value literacy and lifelong learning as a measure of their quality of life, and these are also key elements in Canada's economic success. To be successful, Library and Archives Canada must not only be a vast repository of information, but also a prime learning destination. The organization recognized that it has to move beyond its traditional services and outreach programs to gain a deeper

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[1050] Fitch, and Warner. *Dividends: The Value of Public Libraries in Canada*, accessed.

[1051] Ontario Libraries and Community Information Branch. *The Economic and Job Creation Benefits of Ontario Public and First Nations Libraries*, Toronto: Ontario Libraries and Community Information Branch, 1995. cited in Fitch, and Warner. *Dividends: The Value of Public Libraries in Canada*, accessed.

[1052] Omnifacts Research Limited. *A Study of Public Libraries in Nova Scotia: General Population Survey*, Halifax, N.S.: Department of Education and Culture, 1996. cited in Fitch, and Warner. *Dividends: The Value of Public Libraries in Canada*, accessed.

[1053] Fitch, and Warner. *Dividends: The Value of Public Libraries in Canada*, accessed.

[1054] Ibid., accessed.

[1055] Cultural Heritage Consortium. *Impact Evaluation of Museums, Archives and Libraries: Quantitative Time Series Data Identification Exercise*, accessed.

understanding of how people of all ages, from all cultural backgrounds and in all parts of the country, seek information and learn from it.

Our challenge is to work with educators, students and learners of all ages to understand what people consider a positive learning experience, particularly in the digital information environment, and then to develop resources and services to offer around that knowledge of users […]. Our goal is for educators and learners […] to view Library and Archives Canada as a prime learning resource.[1056]

Library use, therefore, might provide a proxy for learning in library environments and for one form of informal learning.

9.2 Canadian culture data

9.2.1 Culture data framework

Statistics Canada defines culture very broadly as including: economic systems, political ideologies and processes, educational institutions, social programs, the environment, technological systems, recreational practices, artistic and heritage activities, transportation and communication industries, and religious and spiritual activities.[1057] It narrows the approach in its culture data collection, however, by not including areas that are covered in other programs and statistics. Statistics Canada's framework for culture data therefore concentrates more narrowly on artistic and heritage industries, and on creative artistic and heritage goods and services, occupations, and outcomes.

The Department of Canadian Heritage has the major national responsibility for Canadian culture, with the following departments also playing important roles: Foreign Affairs and International Trade, the Department of Finance, the Department of Immigration and Citizenship, the Department of Human Resources and Social Development, the Department of Indian and Northern Affairs, and the Department of Industry.[1058] Industry Canada administers the Community Access Program (CAP) sites that provide Internet access in Canadian communities. See GPI Atlantic's special survey of CAP sites in British Columbia, and its prior report on the value of CAP sites to Canadian communities, undertaken for Industry Canada.[1059]

[1056] Library and Archives Canada. *DPR (Department Performance Report) 2003-2004. National Library of Canada and National Archives of Canada*, Treasury Board of Canada, 2004; accessed September 2005; available from http://www.tbs-sct.gc.ca/rma/dpr/03-04/NLNAC-BNANC/NLNAC-BNANCd3401_e.asp.
[1057] Statistics Canada. *Canadian Culture in Perspective: A Statistical Overview*, accessed.
[1058] Canada Council for the Arts. *Artstats: Selected Statistics on the Arts and Culture in Canada*, The Canada Council. Culture link network, 1997; accessed August 2005; available from http://www.culturelink.org/culpol/canada.html.
[1059] Colman, Ronald. *Economic Value of CAP Sites as Investments in Social Capital: An Analysis Based on GPI Atlantic's Survey of British Columbia's Rural CAP Sites and the Report: "Impact of CAP Sites on*

The Culture, Tourism and Centre for Education Statistics Division of Statistics Canada, through its Culture Statistics Program (CSP), has created surveys, provided statistics, and conducted research on cultural activities in Canada since the early 1980s. The CSP conducts 10 census (rather than sampling) surveys of firms working in cultural fields.[1060] Film industry data, based on four production and distribution surveys, and government expenditures on culture are collected and compiled annually. Surveys on Heritage Institutions, Book Publishers and Exclusive Agents, Periodical Publishing, Performing Arts, and Sound Recording are conducted biannually. The CSP also uses data from the Labour Force Survey, the General Social Survey, and the Survey of Household Spending, among others.

Statistics Canada also compiles a statistical compendium annually that includes basic data on Canadian identity and cultural diversity, culture in homes, government financial support, and individual cultural sectors such as book and periodical publishing, performing arts and music, visual arts, radio and television, and film and video production.[1061]

The Survey of Heritage Institutions collects data from over 2,500 institutions nationwide biannually.[1062] These non-profit institutions include museums, historic sites, archives, exhibition centres, planetariums and observatories, aquariums and zoos, botanical gardens and arboretums, as well as nature parks that have interpretation and educational programs. All of these institutions play a role in informal education.

The time-use sections of Statistics Canada's General Social Surveys in 1992, 1998, and 2005 asked about participation in a long list of cultural activities, which included newspaper, magazine, and book reading. These surveys form the largest source of data on cultural participation of Canadians 15 years of age and older, based on survey sizes of approximately 10,000 individuals.[1063]

Volunteerism" (January 2002), Genuine Progress Index Atlantic, Prepared for Industry Canada: Community Access Program, 2002; accessed March 2002; available from http://www.gpiatlantic.org/pdf/misc/econvalue-cap.pdf.

, _____. *Impact of CAP Sites on Volunteerism*, Genuine Progress Index Atlantic, 2002; accessed March 2002; available from http://www.gpiatlantic.org/pdf/misc/bc-cap.pdf.

[1060] Statistics Canada. *Canadian Culture in Perspective: A Statistical Overview*, accessed.

[1061] Ibid., accessed.

[1062] Statistics Canada. "Heritage Institutions." *The Daily*, Statistics Canada, CANSIM: tables 504-0001 to 504-0003. Data tables: Catalogue no. 87F0002XIE, October 25, 2004, accessed September 2005; available from http://www.statcan.ca/Daily/English/041025/d041025a.htm.

[1063] Foote, John A. "Cultural Consumption and Participaton," *Canadian Journal of Communication*, vol. 27, 2002: 209-220.; and Ogrodnik, Lucie. *Patterns in Culture Consumption and Participation*, Ottawa, Culture Statistics Program, Culture, Tourism and the Centre for Education Statistics, Statistics Canada, 2000; accessed August 2005; available from http://www.canadacouncil.ca/publications_e/statistics/si127235030740937500.htm.

Personal spending on culture goods and services can be derived from the Family Expenditure Survey/ Survey of Household Spending, and from the System of National Accounts, although many types of cultural activities and events can be enjoyed free of charge, and are therefore not covered in these financial data.[1064, 1065] Attendance and participation data are also located in provincial ministries of culture.

In 2004, the Statistics Canada Culture Statistics Program released a major framework report, which now forms the foundation for the methodology of surveys used in all CSP data collection and research. The CSP is interested in going beyond measures of volume, rate, and size, to measure the social impact and outcomes of culture activities and the informal learning embodied in cultural activities. For the moment, however, the CSP focus remains mainly economic. The CSP framework, for example, concentrates on measuring "the economic impact of the culture sector, the size and characteristics of the culture labour force, the value of international trade for culture goods and services, [and] the value of consumer spending on culture goods and services."[1066]

The CSP framework also discusses the definitions and concepts that guide the collection of statistics and the development of indicators. It includes the entire "creative chain": the creation, production, manufacturing, and distribution of culture goods and services, and the activities that support this chain.[1067]

It is important to note again that participation in cultural activities does constitute a form of informal learning, and that cultural literacy can be seen as a key learning outcome. A review of example data sources on cultural output and participation is also relevant to the possibility of assessing informal learning within cultural activities, and highlights the

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[1064] Foote. "Cultural Consumption and Participaton."

[1065] The Family Expenditure Survey/ Survey of Household Spending and the System of National Accounts include the following data that are relevant to the cultural sector: spending on the following goods and services: works of art, carvings and vases, antiques, movie admissions, artists' materials, handicraft and hobby / craft kits, cameras and accessories, musical instruments, parts and accessories, compact disks, tapes, videos and video disks, rental of videotapes and video disks, film and processing, photographers' and other photographic services, rental of cablevision and satellite services, admissions to museums and other activities and venues, library services (duplicating, library fees and fines), live performing arts, newspapers, magazines, books (excluding school textbooks), maps, sheet music and other printed material, and textbooks. Singh, Vik. *Economic Contribution of Culture in Canada*, Ottawa, Statistics Canada, Catalogue no. 81-595-MIE2004023, 2004; accessed August 2005; available from http://www.statcan.ca/english/research/81-595-MIE/81-595-MIE2004023.pdf.

[1066] Statistics Canada. *Canadian Framework for Culture Statistics*, Research Paper Series, Culture Statistics Program, Statistics Canada, Catalogue no. 81-595-MIE2004021, 2004; accessed August 2005; available from http://dissemination.statcan.ca:8083/english/research/81-595-MIE/81-595-MIE2004021.pdf. p. 6.

[1067] Specifically, the framework excludes the environment, sports, recreation, and technology, but includes: written media, including books, magazines, and newspapers, the film industry, broadcasting, sound recording and music publishing, performing arts, visual arts, crafts, architecture, photography, design, advertising, festivals, museums, art galleries, archives, libraries, culture education, heritage and preservation, culture support by government, activities by unions/ associations related to culture, the taxonomies of industries, goods and services, and occupations from recognized standard classifications.

possibility of considering informal learning within the totality of education/ learning systems.

Examples of available culture data that might be used as proxies of informal learning in Canada, and for what we know about the arts, include those that are gathered about the categories listed below.[1068] Some of these categories might overlap with Bhutanese cultural categories. However, if Bhutan is interested in developing informal learning measures, because it has a very different cultural system than Canada, it will no doubt want to develop categories and informal learning measures relevant to the Bhutanese culture.

Cultural categories:
Creators
authors, playwrights, poets, other writers; photographers; performing artists: actors, dancers, musicians, singers; composers; painters, sculptors, craftspeople; architects; and new media creators: numbers who work in these professions, average earnings (and distribution).

Producers
book, periodical publishing; film making: production, post-production, labs (including type of film); theatrical producers, impresarios, festivals; sound recording and music publishing; new media producers; broadcasters (tv, radio): number of firms, theatres (and distribution by size); numbers of titles, films, productions, and recordings produced; number of copies sold, number of productions; size of workforce; total revenue or sales; language of product.

Disseminators
booksellers; libraries (can also be considered conservators); cinemas; theatres; festivals; music stores; video stores; commercial art galleries; new media distributors: number of firms, libraries (size of collection, number of item circulated, size of workforce, type of collection, type of institution, e.g., public, university); theatres (and distribution by size); number of titles, copies, screen hours, productions sold / held; size of workforce; attendance.

Conservers and Educators
museums (and other institutions of conservation such as heritage sites and national parks); art galleries; zoos, planitaria, aquaria, and botanical gardens: number (and distribution by size), size of collection, attendance, size of workforce, annual costs, and annual revenues; music conservatories, art schools, and performing arts schools: number (and distribution by size), number of students, number of graduates, size of workforce, annual costs, annual revenues, and type of courses.

[1068] Stanley. *Beyond Economics: Developing Indicators of the Social Effects of Culture*, accessed., p. 140–143.

Users

museum visitors, book and periodical readers (including library users), cinema audiences, video consumers, broadcasting viewers / listeners (by type of program and media, theatre (live performance) audiences, festival participants, music (disk) listeners, gallery visitors, art gallery customers (collectors): number of users (incidence), number of hours / books, number of times (frequency), number of collectors.

9.2.2 Library data

Statistics Canada stopped collecting and publishing library statistics in the early 1990s.[1069] The library community itself, through partnerships among the National Library, provincial library agencies, and the major national library associations, now collects and funds basic data collection, compilation, and analysis on library activities. These partnerships created the National Core Library Statistics Program (NCLSP) in order to collect, analyze, and report library statistics in Canada.[1070] Libraries and Archives Canada (previously the National Library of Canada), and an advisory committee representing various library associations and agencies, coordinate the NCLSP.

The NCLSP has collected data from Canadian public, academic, and special libraries (excluding school libraries) in four cycles: 1994, 1995, 1996, and 1999, in order to capture the impact of libraries on the Canadian public.[1071] This is the first national program to develop profiles of Canadian libraries on national, provincial, and territorial levels. The program is slated to continue in three-year cycles, although the latest data available online are from 1999. The NCLSP database contains 125 variables to represent 23 key indicators that include general information on institutional characteristics, services (question-answering services and circulation transactions), collection use and infrastructure, staffing, interlibrary loans, and expenditures.

The Statistics Canada Culture Statistics Program, however, does not use the NCLSP data because it contends these "have limited levels of reliability owing to methodological or collection issues [which] has restricted the utility of the data from this source, notwithstanding the breadth of information available."[1072] In addition, the CSP found a

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[1069] Canadian Library Association (CLA). *An Investment in Libraries: An Investment in the Nation's Information Infrastructure*, Submitted to: The House of Commons Finance Committee. 2001-2002 Pre-Budget Consultation, CLA, 2000; accessed September 2005; available from http://www.cla.ca/issues/investment.htm.

[1070] Schrader, Alvin M. "Canada's National Core Library Statistics Program: First Steps in Developing Key Performance Indicators." Paper presented at the 65th International Federation of Library Associations and Institutions (IFLA) Council and General Conference, Bangkok, Thailand, August 20-28, 1999; accessed September 2005; available from http://www.ifa.org/IV/ifla65/papers/035-120e.htm.

[1071] Schrader, and Brundin. *National Core Library Statistics Program. Statistical Report, 1999: Cultural and Economic Impact of Libraries on Canada*, accessed. This report contains detailed methodology information that covers validity and accuracy.

[1072] Statistics Canada. *Canadian Culture in Perspective: A Statistical Overview*, accessed. p. 124.

lack of comparability between occupational data from the Labour Force Survey and the NCLSP. The CSP also criticizes a lack of consistency between sources. For example:

> Indicators taken collectively do not always present a consistent picture. For example, the demand for information according to the NCLSP appeared high while library use for leisure was not as substantial according to the General Social Survey. On the other hand, collection size was increasing. It can be difficult to understand relationships among variables without more research on such topics.[1073]

Two versions of the NCLSP database currently are available for public use: one containing the 1999 data, and one containing the combined 1994–1995–1996–1999 data. The 1999 survey included 1,490 libraries—60% of which were public libraries, 15% academic libraries, and 25% special libraries. Only 248 of the libraries, however, reported collections larger than 100,000 items, and these libraries—less than 20% of the total—accounted for 80% of all activity. Academic libraries accounted for one-third of all staffing and expenditures, but only 18% of all inquiries and 11% of all circulation. They contained 57% of the collection holdings, while public libraries contained only 28% of collection holdings.[1074] Schrader and Brundin note:

> Public libraries [in Canada] account for more than 60% of all libraries, over half of all staffing and expenditures, almost 80% of all inquiries, and almost 90% of all circulation transactions. Public libraries held only 30% of all collections and less than 20% of all serials in the 1999 Program, compared with 60% of collections and serials owned by academic libraries.[1075]

Two key indicators relevant for learning, as noted above, are collection use and information delivery in question-answering services. The NCLSP defines question-answering services as:

> … encounters between a user and a member of the library staff that involve an attempt to supply factual or bibliographic information requiring knowledge, use, recommendation or interpretation of an information source or bibliographic tool […] [and] include requests received in person, by mail, telephone and electronic mail.[1076]

Analysis of the NCLSP data by Alvin Schrader and Michael Brundin shows that in 1999, more Canadians went to libraries than to movie theatres, and "for every three donuts sold by Tim Hortons in 1999, one book or other item was accessed by someone in a library

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[1073] Ibid., accessed. p. 124.
[1074] Schrader, and Brundin. *National Core Library Statistics Program. Statistical Report, 1999: Cultural and Economic Impact of Libraries on Canada*, accessed.
[1075] Ibid., accessed.
[1076] Ibid., accessed. p. 147.

somewhere in the country."[1077] Every day in 1999, Canadians consulted over one million library publications, which averages out to more than 13 items per person per year. Trend analysis from 1994–1999 showed this pattern to be fairly stable. The public asked librarians more than 110,000 inquiries per day or 1.3 questions for every person (including children) in the country in 1999. Public libraries accounted for 77% of all inquiries and 88% of all circulations reported in the 1999 Program.[1078]

9.2.3 Book reading for pleasure

Reading for pleasure is one of the most direct means of informal learning, whether or not the reading is undertaken specifically for learning purposes.[1079] A national telephone survey, *Reading and Buying Books for Pleasure: 2005 National Survey*, commissioned by the Department of Canadian Heritage, was undertaken by Createc + in January 2005 to create a detailed statistical portrait of the activities of Canadians buying and reading books for pleasure.[1080]

The survey was administered to a random sample of 1,963 Canadians 16 years of age and older, and also included an extra "oversample" of Canadians from minority official-language communities. The broad areas covered included reading behaviours and skills, attitudes and opinions, sources of awareness about books and book supplies, Canadian authors, introducing children to reading, the Internet, and profile descriptors. The objective of the survey was to provide benchmarks:

> … covering a vast array of observations, attitudes, intentions, and behaviours connected with purchasing, borrowing and reading new or used books for pleasure, and to create a computerized data bank that will be made available to interested individuals and organizations.[1081]

In the final report of the *Reading and Buying Books for Pleasure: 2005 National Survey,* Createc+ compared the results of the survey with findings from the Canadian Heritage *Reading in Canada Survey*, conducted by Ekos Research Associates in 1991.[1082] The final report found that, despite claims among educators and others about trends toward lower reading rates in Canada, the rate of reading for pleasure has remained almost unchanged in the last 15 years. "Regular readers," or those who read books for pleasure

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[1077] Ibid., accessed. p. iv.
[1078] Ibid., accessed. p. 15.
[1079] Hooper-Greenhill. "Measuring Learning Outcomes in Museums, Archives and Libraries: The Learning Impact Research Project (LIRP)."
[1080] Createc +. *Reading and Buying Books for Pleasure: 2005 National Survey Final Report*, Department of Canadian Heritage, 2005; accessed September 2005; available from http://www.canadianheritage.gc.ca/pc-ch/pubs/lalpd-rbbp/index_e.cfm.
[1081] Ibid., accessed.
[1082] Ibid., accessed.

every day or almost every day, totalled 54% of Canadians, while 33% of Canadians read books for pleasure occasionally.

Non-readers, or those who stated they read no books for pleasure, comprised 13% of respondents, compared to 43% of the population in the U.S.[1083] Of the 13% of those who reported they were non-readers, 26% said that they did not know how to read well. Of Francophones living outside of Quebec, 32% reported they could not read very well (compared to 11% of Francophones as a whole, and 10% of Anglophones.)[1084] Commenting on the discrepancy between the Canadian and U.S. results, the survey researchers concluded: "These results could lead one to assume that the difference in reading rates between the two countries could be due to a difference in enthusiasm for literary materials."[1085]

The 2005 *Reading and Buying Books for Pleasure* survey found that 87% of respondents read at least one book a year; the average number of books read annually for pleasure was about 17 books pre capita (based on 100% of the sample); and, as noted above, 54% of respondents read books for pleasure every day. These are the "regular readers." Quebec had the lowest rate of regular readers at 46% of respondents, while British Columbia and the Prairies had the highest rates at 59% and 60% respectively. In Ontario, 55% of respondents were regular readers, and in the Atlantic provinces 53% were regular readers. The reasons people said they read were to relax (56% of readers), and to expand their knowledge (30% of readers). Thirty seven per cent of male readers were looking more to expand their knowledge, compared with 24% of women readers.[1086]

The 2005 *Reading and Buying Books for Pleasure* survey also found that three social variables were closely correlated with reading for pleasure: gender, education level, and language, as indicated below. There was no generation gap in reading rates. Attitudes to reading instilled by parents appeared to correlate with reading rates, and women introduced reading to children more often than did men.[1087]

In the same *Reading and Buying Books for Pleasure* survey, six out of ten regular readers were women, compared with less than half of men who read for pleasure regularly. Of those who had completed university, 59% read regularly, and of those who had not

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[1083] The United States data is from [United States] National Education Association (NEA). *Reading at Risk - a Survey of Literacy Reading in America, Survey of Public Participation in the Arts 2002*, 2004. cited in Createc +. *Reading and Buying Books for Pleasure: 2005 National Survey Final Report*, accessed.. The U.S. survey included all reading matter, such as magazines and newspapers, rather than only books, which is what the Canadian survey measured. Createc+ offered the following explanation for the discrepancy between the United States and Canada reading rates: "The percentage of readers having read at least one literary work (79 per cent) is much higher (47 per cent) than what the SPPA [Survey of Public Participation in the Arts] 2002 survey on the population of the United States reported (published by the NEA in 2004)." p. 45.

[1084] Createc +. *Reading and Buying Books for Pleasure: 2005 National Survey Final Report*, accessed.

[1085] Ibid., accessed.p. 45.

[1086] Ibid., accessed.

[1087] Ibid., accessed.

completed either university or high school, 48% of respondents in each category read regularly. While 59% of Anglophones regularly read for pleasure, only 45% of Francophones did so. Francophones read more documentary books and books on current events, graphic novels, biographies, and how-to books than did Anglophones, while Anglophones read more humour and religious books.[1088]

Detective, spy, and adventure novels were the most popular types of reading matter. Men read more books on science and technology, history, war, genealogy, and heritage than did women, and women read more romance novels and personal growth books than did men. Young people, ages 16 to 24, read more science fiction, fantasy, graphic novels, and horror novels than did older readers.[1089]

As this content summary indicates, it is not possible to equate all reading for pleasure with the acquisition of knowledge or informal learning, let alone with transmission of the wisdom and values discussed earlier. Far finer and more detailed research and content analysis are necessary in order for this indicator of informal learning to become a true indicator of an educated populace. After all, misinformation, negative values, and destructive behaviour that diminish wellbeing may be "learned" from reading as readily as wisdom, positive values, and constructive behaviour that enhance wellbeing. This caveat is a reminder of the importance of the contextual issues concerning wisdom, values, wellbeing, and sustainability in establishing an informal learning framework. In the meantime, the aggregate, and admittedly gross, statistics on reading for pleasure are presented here because they are the only evidence presently available on the role of pleasure reading as an ingredient of informal learning in Canada.

9.2.4 Canadian literature

The *Reading and Buying Books for Pleasure: 2005 National Survey* discussed above found that many respondents did not pay attention to the nationality of authors and had difficulty recognizing Canadian writers.[1090] Only 33% of respondents said they were familiar with Canadian authors.

According to The Writers' Trust of Canada, there are two opposing camps in the education system about teaching Canadian literature in schools:

> One group believes that teaching Canadian literature is part of a good education and 'good citizenship'— 'We must be the only country in the world that doesn't teach its own literature in its schools.' There are others who maintain that the nationality of the author is not important: 'Nationalism and nationalist agenda and the cultural value of literature are mutually exclusive.' Despite a publishing

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[1088] Ibid., accessed.
[1089] Ibid., accessed.
[1090] Ibid., accessed.

industry that boasts an international reputation, many teachers say their colleagues have 'disdain' for Canadian literature. Some teachers suggest that Canadian literature is limited in scope, and lacking in universal themes and 'moral fibre.'

A huge issue for teachers is content that is acceptable by community standards: 'usually Canadian fiction doesn't fit this criteria.' [*sic*…]. The majority of respondents would like to see the amount of Canadian literature taught in schools increased but in order for that to happen there needs to be support, funding, resources and clear mandates from provincial ministries.[1091]

In 2002, the Canada Council for the Arts conducted a study examining how much Canadian literature is taught in English-language Canadian high schools.[1092] The Writers' Trust of Canada sent teacher, librarian, and student surveys to all high schools and received a "good response rate" from across the country. The Executive Summary of the study reports that provincial guidelines are emphasizing technology and methods of communication other than print, and that English literature classes have been replaced with English Language Arts classes. The study also found that Canadian teacher training does not emphasize Canadian literature, and most of the literature being taught is American authored.[1093]

Canadian literature courses, which mainly use anthologies rather than novels, are offered in only 31% of the schools, and this number has been declining. The teachers who responded to the survey reported that few students can identify ten Canadian writers, and most students read five or less Canadian books during high school.[1094]

The report concludes there is a lack of awareness, extending from ministries through curriculum designers to teachers, students, and parents, about the amount of Canadian literature taught in high schools. It offers, in part, the following recommendations:

The findings of this report should be circulated widely to the media, government and all stakeholders. An ongoing campaign needs to be designed to create awareness. There needs to be increased presence of Canadian literature at educational conferences, professional development days, round tables, and any other opportunities to promote the use of Canadian literature in Canadian schools […].

The results of this report suggest that in the environment of a Canadian literature course students learn context and cultural literacy. The development of cultural

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[1091] The Writers' Trust of Canada. *English-Language Canadian Literature in High Schools*, Canada Council for the Arts, 2002; accessed September 2005; available from http://www.canadacouncil.ca/publications_e/research/aud_access/di127234254927656250.htm. p. 2.
[1092] Ibid., accessed.
[1093] Ibid., accessed.
[1094] Ibid., accessed.

literacy is necessary in order to ensure that the next generation has both knowledge and pride in Canada's rich literary heritage.

The Council of Ministers of Education should be approached and encouraged to: develop mandatory Canadian literature courses as part of the curriculum design; develop guidelines about percentage of Canadian literature in courses at all levels. In order for such recommendations to be given serious consideration the other components of this report must be implemented: support, funding, access to information, on-going training.[1095]

9.2.5 Periodical publishing

Prior to 2004, the *Periodical Publishing Survey* was a census of all known periodicals published in Canada. However, since 2004, the survey only includes a *sample* of the periodicals published in Canada.[1096] Types of periodicals include general consumer, special interest consumer, business or trade, farm, religious, and scholarly.

The last full surveys were in 1998/99 and 2003. In the 10 years between 1993 and 2003 magazine publishing activity increased from 1,256 publishers and 1,678 titles in 1993 to 1,633 publishers and 2,383 titles in 2003.[1097] This represents a 42% increase in numbers of titles. The survey also includes advertising as a percentage of the total revenue. During the 10-year period, the share of total revenue from subscription sales declined, while advertising revenues grew. As Statistics Canada notes: "In 2003, sales of advertising space represented 64% of total revenue, up from about 61% a decade earlier. On the other hand, subscription sales accounted for about 19% of revenues in 2003, down from about 25%."[1098] In addition, French-language periodicals are less dependent on advertising revenue and earn more from individual sales than do English-language periodicals.[1099] However, since a simple increase in the number of publishers and titles cannot be directly correlated with learning activity or outcomes, these data are not recommended as indicators of informal learning.

[1095] Ibid., accessed. p. 5.

[1096] Statistics Canada. *Periodical Publishing Survey*, 2005; accessed August 2005; available from http://www.statcan.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3139&lang=en&db=IMDB&dbg=f&adm=8&dis=2.

[1097] Statistics Canada. "Periodical Publishing." *The Daily*, Statistics Canada, Catalogue no. 87F0005XIE, June 8, 2005, accessed June 2005; available from http://www.statcan.ca:80/Daily/English/050608/d050608a.htm.

[1098] Ibid.

[1099] Ibid.

9.2.6 Museum data

As noted above, the Department of Canadian Heritage and the Culture, Tourism and Centre for Education Statistics Division of Statistics Canada, through its Culture Statistics Program, collect museum data.[1100] In 1999, museums were the most popular culture or "heritage institutions"—among historic sites and archives, aquariums and zoos, botanical gardens, arboretums and conservatories—with museum attendance rising 5% from 26.5 million in 1999 to 27.8 million in 2002.[1101] The *Survey of Heritage Institutions* is conducted biennially.[1102] The data from this survey cover consumer participation or attendance and spending, workforce, government spending, and economic contributions (including sales in museum and heritage gift shops) to the GDP. However, as is the case with libraries, the attendance and spending data tell very little about learning within a museum environment.[1103]

Most of the information on learning in museums comes from researchers using general visitor studies, and most of this work has been done in the U.S., U.K., and Australia.[1104] According to Eilean Hooper-Greenhill and Theano Moussouri of the University of Leicester, U.K., the Groupe de Recherche sur l'Education et les Musées (GREM) at the University of Quebec in Montreal has done work on museum learning in Canada, as has John C. Carter in a 1999 unpublished Ph.D. thesis from the Department of Museum Studies, University of Leicester, entitled *The Evolution of Museums as Centres for Learning: Chapters in Canadian Museology*.[1105] Neither of these Canada-specific sources was available for this review. If they can be tracked down for future updates of this report, they may yield data that can populate an indicator on museums as an instrument of informal learning in Canada.

Hooper-Greenhill and Moussouri have conducted extensive research on learning in museums and libraries.[1106] In a review of the research on learning in museums, they find that the majority of studies focus on exhibitions, while very few studies focus on learning through participation in programs or workshops, or through the use of educational material or objects. Most of the research also focuses on single visits to a particular

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[1100] Statistics Canada. *Canadian Framework for Culture Statistics*, accessed.

[1101] Statistics Canada. "Heritage Institutions."

[1102] Statistics Canada. *Survey of Heritage Institutions: Detailed Information for 2002/03*, Statistics Canada, 2004; accessed September 2005; available from http://www.statcan.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3107&lang=en&db=IMDB&dbg=f&adm=8&dis=2.

[1103] Statistics Canada. "Heritage Institutions."

[1104] Hooper-Greenhill, Eilean, and Theano Moussouri. *Researching Learning in Museums and Galleries, 1990-1999: A Bibliographic Review*, Research Centre for Museums and Galleries, Department of Museum Studies, University of Leicester, 2002; accessed August 2005; available from http://www.le.ac.uk/museumstudies/bookshop/rcmg_publications.htm.

[1105] Ibid., accessed.

[1106] Ibid., accessed.

gallery or exhibit, mainly by school and family groups, who are traditional science museum visitors, and ignore considerations of museum environments in general.

The authors note that a few studies focus on the social importance of museum visits, including the role that museums play in the social life of visitors, how prior knowledge influences museum learning, and how the motivation for visiting relates to culture. However, they note that few of these studies "have viewed learning as a continuous process and thus, tried to explore visitor learning before, during and after the visit as different stages of a single learning experience."[1107] They recommend that longitudinal research be undertaken to assess the long-term effects of museums on the lives of participants. In conclusion, they argue: "Since different visitors use museums for different reasons and have different needs, it is hard to deduce evidence about visitors in general using findings from studies of children and adults in specific social groups."[1108]

9.2.7 Performing arts

According to Statistics Canada:

> Performing arts refers to any live theatre (excluding dinner theatre and commercial theatre), music (orchestras, ensembles, and choirs), dance (classical and contemporary) and opera. Presenters and for-profit performing arts companies are excluded from [the *Survey of Performing Arts*]."[1109]

The *Survey of Performing Arts* is conducted for non-profit professional live arts companies every two years, with 2003 being the latest year reported.[1110] The Survey of Arts, Entertainment and Recreation Services is conducted annually for both for-profit and non-profit performing arts companies. In 2003, 300 out of 642 non-profit companies reported losses in revenue.

However, in 2003, over 3.8 million young people attended approximately 13,500 performances in the four major disciplines (theatre, music, dance and opera) and accounted for just over one-quarter of total attendance (14,804,324 people). In 2003, youth music performance attendance increased 28.8% from 1999, and youth opera attendance increased 20.6% over 1999 rates. Music performances targeted at youth accounted for 38% of all music performances in 2003 and 30% in 1999.[1111]

[1107] Ibid., accessed. p. 18.
[1108] Ibid., accessed., p. 18.
[1109] Statistics Canada. "Performing Arts." *The Daily*, Statistics Canada, CANSIM: tables 506-001 to 506-005, Catalogue no 87F0003XIE, December 15 and April 30, 2004.
[1110] Ibid.
[1111] Ibid.

9.2.8 Extent of television viewing

Some types of television viewing may be a source of informal learning, but television viewing in general does have an impact on the knowledge of almost all Canadians. Therefore, public viewing habits are important to understand.[1112] The impacts of television viewing will be discussed in the chapter below dealing with media literacy. Here we look very briefly only at the extent of television viewing and the types of programs watched.

Statistics Canada collects information on television viewing from a number of sources and makes the data available in the Television Viewing data tables.[1113] The *2003 Television Viewing Survey* collected data on the television viewing habits of Canadians aged two and over using a diary type questionnaire over four weeks in October-November 2003.[1114] The categories of television programs listed in the survey included news and public affairs, documentaries, academic instruction, social and/ or recreational instruction, drama, comedy, religion, sports, variety and games, music and dance, and videocassette recorder. The results show that in 2003, news and public affairs took up 26.2% of viewing time, dramas 24.9% of viewing time, and academic instruction and documentaries 3.3% and 3.8% of the viewing time respectively.[1115]

The survey also shows a decline in the number of hours that children, teens, and young adults are watching television. For example young men aged 18 to 24 spent 14.3 hours per week watching television in 1998, but 11.1 hours in 2003. The pattern was the same for young women, teens, and children. Older Canadians, however, watched more television in 2003 than in 1998, which raised the average hours per week of television viewed by Canadians to 22 hours per week (or more than three hours per day). This average is basically the same as that shown in each of the previous five years. Internet use, however, rose among households with children under 18 from 41% of households in 1999 to 73% of households in 2003, suggesting that Internet use may be reducing the time spent viewing television by young people.[1116]

[1112] McDonald, Ross. "Television, Materialism and Culture: An Exploration of Imported Media and Its Implications for GNH [Gross National Happiness]," *Journal of Bhutan Studies*, vol. 11, no. Winter, 2004: 68-89; accessed October 2006; available from http://www.bhutanstudies.org.bt/journal/vol11/v11-4.pdf.

[1113] Statistics Canada. *Television Viewing: Data Tables*, Statistics Canada, Catalogue no. 87F0006XIE, 2005; accessed October 2005; available from http://www.statcan.ca:80/bsolc/english/bsolc?catno=87F0006X.

[1114] Statistics Canada. "2003 Television Viewing Survey." *The Daily*, Statistics Canada, CANSIM: tables 502-0001 to 502-004 and Catalogue no. 87F0006XIE, March 31, 2005, accessed March 2005; available from http://www.statcan.ca:80/Daily/English/050331/d050331b.htm.

[1115] Ibid.

[1116] Ibid.

9.3 Generic learning outcomes from cultural organizations

The growing interest in the role of libraries and museums as learning centres is changing how these centres are thinking about measuring learning outcomes. Questions are being asked about the nature of learning, and whether and how visitors learn in libraries and museums, rather than whether the visitor was satisfied with the provision of services.[1117] In the U.K., the Learning Impact Research Project (LIRP)[1118] has developed a new approach to the measurement of cultural learning outcomes for the Museums, Libraries and Archives Council (MLA) (formerly Resource: The Council for Museums, Archives, and Libraries).[1119] The LIRP was developed over an 18-month period during 2001–2003, and is now being endorsed by national policy and funding bodies in the U.K.[1120] Part of the LIRP mandate was to develop a system and a set of standard tools that could be used to indicate national outcomes of learning across and between domains.[1121]

The LIRP has developed five generic learning outcomes (GLOs) that enable the quantification and in-depth analysis and description of the results of learning. The GLOs provide a common language for talking about learning, and provide a method to use what people say about their learning experiences to provide evidence of learning and impact. The MLA has developed an online "Measure Learning Toolkit" to help cultural institutions use the GLOs in learning outcome measures.[1122] We will review this development in some detail since this U.K. framework might be useful not only to measure informal learning outcomes for libraries, museums, and other cultural institutions in Canada, but also for other learning outcome indicator areas as well.

Prior to developing the outcomes of learning, the LIRP first needed to define learning. Hooper-Greenhill notes that, in recent years, the meaning of learning has changed considerably from the view that learning is mainly the acquisition of facts and knowledge to the more constructivist view of learning we discussed earlier. She argues that:

[1117] Resource: The Council for Museums, Archives, and Libraries. *The Generic Learning Outcome System: Measuring the Outcomes and Impact of Learning in Museums, Archives and Libraries*, The Learning Impact Research Project (LIRP) Short Project Report. Research Centre for Museums and Galleries (RCMG), 2003; accessed September 2005; available from http://www.mla.gov.uk/documents/insplearn_lirp_rep.pdf.

[1118] The Learning Impact Research Project (LIRP) is located at the Research Centre for Museums and Galleries (RCMG), University of Leicester.

[1119] Hooper-Greenhill. "Measuring Learning Outcomes in Museums, Archives and Libraries: The Learning Impact Research Project (LIRP)."

[1120] Museums, Libraries and Archives Council (MLA). *Inspiring Learning for All: The Measure Learning Toolkit*, London, U.K., MLA, 2004; accessed September 2005; available from http://www.inspiringlearningforall.gov.uk/measuring_learning/default.aspx.

[1121] Resource: The Council for Museums. *The Generic Learning Outcome System: Measuring the Outcomes and Impact of Learning in Museums, Archives and Libraries*, accessed.

[1122] Museums. *Inspiring Learning for All: The Measure Learning Toolkit*, accessed.

> [T]his way of thinking about learning [as the acquisition of facts and knowledge] is outdated and needs to be challenged. Teachers and educational theorists now understand learning processes much more deeply and recognise that the acquisition of facts and information cannot be separated from the feelings, values, actions and locations associated with those facts […]. Today, 'learning' is not usually used to refer to knowledge or scholarship; 'learning' is used to refer to learning processes […]. It includes the acquisition of skills, the development of judgement, and the formation of attitudes and values. It includes the emergence of new forms of behaviour, the playing of new roles, and the consolidation of new elements of personal identity. In addition, even when concerned with knowledge, learning does not always mean the acquisition of new facts; much of what we would recognise as learning involves the use of what we already know, or half-know, in new combinations or relationships or in new situations. Seeing things in new relationships gives old facts new meanings […]. Attitudes, values, and self-confidence affect learning processes. Cognitive knowledge (information, facts) cannot be separated from affective knowledge (emotions, feelings, values).[1123]

Hooper-Greenhill also makes a distinction between a learning process and a learning outcome. For example, enjoyment or inspiration might not be seen as a learning process, however, both can clearly be seen as learning outcomes, which are the results of learning experiences.

Based on these new definitions of learning, the LIRP developed the following five generic outcomes of learning from cultural organizations:

1. an increase in knowledge and understanding
2. an increase in skills
3. a change in attitudes or values
4. increased enjoyment, inspiration, creativity
5. a change (progression) in action or behaviour[1124]

These GLOs reflect learning across a broad range of dimensions and place more emphasis on inspiration and creativity and on attitude and value change than is generally found in the formal education sector.

[1123] Hooper-Greenhill. "Measuring Learning Outcomes in Museums, Archives and Libraries: The Learning Impact Research Project (LIRP)." p. 157.

[1124] Hooper-Greenhill distinguishes "behaviour" as used here from the behaviourist learning theory: "'Behaviour' does not imply an acceptance of behaviourist learning theory. From a behaviourist perspective, learning is that which results in a change of behaviour as a result of an experience, and, this behaviour can be observed and measured. The model of learning and teaching that underpins most forms of behaviourism is a stimulus–response model, which is no longer regarded as an adequate way of describing learning. […] The broad and holistic way in which learning is presented [here] is underpinned by interpretivist social and educational theory. […] However, this is not to deny that observed and reported behaviour can be used as an indicator of learning; it can, and it is especially useful if it is supported by evidence gathered using other methods such as interviews." Ibid. p. 169.

Each of these five GLOs are further subdivided, as seen below, to help explain each dimension:

Knowledge and understanding

- knowing about something
- learning facts or information
- making sense of something
- deepening understanding
- understanding how museums, libraries and archives operate
- making links and relationships between things

Skills

- knowing how to do something
- being able to do new things
- intellectual skills
- information management skills
- social skills
- communication skills
- physical skills

Attitudes and values

- feelings
- perceptions
- opinions about ourselves (e.g., self esteem)
- opinions or attitudes towards other people
- increased capacity for tolerance
- empathy
- increased motivation
- attitudes towards an organization (e.g., a museum, archive, or library)
- positive and negative attitudes in relation to an experience

Enjoyment, inspiration, creativity

- having fun
- being surprised
- innovative thoughts
- creativity
- exploration, experimentation
- being inspired

Activity, behaviour, progression

- what people do
- what people intend to do
- what people have done
- reported or observed actions
- a change in the way that people manage their lives[1125]

The *Measuring Learning Toolkit* lists examples of respondent statements that can be coded into each of the subdivisions.[1126] We have included these examples in Appendix 16.

In addition to creating learning outcomes for users, the Museums, Libraries and Archives Council (MLA) also lists four outcomes for the institution itself:

1. A broader range of people use the museum, archive or library
2. New learning opportunities are created as a result of partnerships
3. Staff, volunteers and members of governing bodies are effective advocates for learning
4. People who work in and for the organization are continuously learning and developing their practice[1127]

Hooper-Greenhill further describes the usefulness of the generic learning outcomes in ways that could be highly relevant for the eventual development of key indicators:

> The GLOs may be used to structure (or pre-code) research studies or tools, or may be used to categorise (or post-code) what people say about their learning experiences. References and comments pertaining to each of the GLOs may be counted and compared in relation to the others and the GLOs may be compared across time and / or compared between organisations, thus presenting a broad survey of learning.[1128]

The LIRP also describes how learning may be measured using the GLO framework. It notes that learning may be measured by:

- giving an evidence-based account of the range, diversity, and depth of each of the five generic learning outcomes
- giving truthful and verifiable examples of how users talk about the outcomes of their learning

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[1125] Museums. *Inspiring Learning for All: The Measure Learning Toolkit*, accessed.

[1126] Ibid., accessed.

[1127] Ibid., accessed.

[1128] Hooper-Greenhill. "Measuring Learning Outcomes in Museums, Archives and Libraries: The Learning Impact Research Project (LIRP)." p. 167.

- describing accurately who these users are and how they relate to the general pattern of users of the organisation in question
- comparing and contrasting the statements made by users about the quality of their educational experience
- comparing and contrasting numerical data relating to the value attributed to learning and its outcomes by users over time[1129]

During the pilot phase, the LIRP tested the effectiveness of the GLOs in 15 museums, libraries, and archives, and found evidence that all were necessary, valid, and useful. Each institution developed its own data gathering tools such as evaluation sheets, surveys and questionnaires, and each was able to quantify the evidence by counting the numbers of occurrences in each category from the responses. The toolkit includes a "question bank," which is reproduced here in Appendix 17, that provides questions that reflect the five GLOs, and that can be used on surveys or in focus groups.[1130]

We have recommended that this toolkit and the GLOs in general be tested and applied in Canada as the basis for gathering comparable national data that can eventually populate key indicators of informal learning. Statistics Canada and Canadian Heritage, in collaboration with provincial departments of education and culture, are the appropriate agencies to apply this U.K. measurement instrument cross-nationally in Canada. In such a case, where outstanding research and experimentation over several years in another country has resulted in the development of a highly useful measurement tool, there is no need for Canada to reinvent the wheel or embark on its own independent venture in this field. On the contrary, a distinct advantage in applying this U.K. tool in Canada with minimal if any change is that this can lead to the development of internationally comparable measures, which might be useful in Bhutan as well.

[1129] Resource: The Council for Museums. *The Generic Learning Outcome System: Measuring the Outcomes and Impact of Learning in Museums, Archives and Libraries*, accessed. p. 3.
[1130] Museums. *Inspiring Learning for All: The Measure Learning Toolkit*, accessed.

10. Mental Health Influences on the Learning Environment

The research shows that a learning environment dominated by stress and anxiety, pressure for new information and constant change, and within an atmosphere of competition and speed is not an environment conducive to learning, as has been demonstrated in the scientific studies briefly discussed below. Factors such as anxiety, depression, information and role overload, and attention deficit disorders affect learning capacity, educational attainment, and the ability to be lifelong learners. Lasn speculates that cultural factors such as consumer culture, data overload, and mediated culture are some of the factors behind a widespread malaise that affects the functioning of adults as well as children.[1131]

10.1 Stress and anxiety

10.1.1 Depression and anxiety disorders and their effect on learning

Writing for *The New York Observer* in 1997, Jim Windolf asked, "Is Everybody Crazy?" and then listed the range of psychological ailments of Americans, which also affect Canadians in comparable numbers.[1132] Windolf writes:

> If you add up all the psychological ailments Americans complain of, the portrait that emerges is of a nation of basket-cases. Ten million suffer from Seasonal Affective Disorder. Fourteen million are alcoholics. Fifteen million are pathologically socially anxious. Fifteen million are depressed. Three million suffer panic attacks. Ten million have Borderline Personality Disorder. Twelve million have 'restless legs.' Five million are obsessive / compulsive. Two million are manic-depressive. Ten million are addicted to sex. Factoring in wild-card afflictions like Chronic Fatigue Syndrome and multiple chemical sensitivity, and allowing for overlap (folks suffering from more than one problem), […] 77% of the adult population is a mess."[1133]

Lasn cites trends that show:

- Worldwide rates of major depression in every age group have risen steadily since the 1940s.

[1131] Lasn. *Culture Jam: How to Reverse America's Suicidal Consumer Binge - and Why We Must*.
[1132] Windolf, Jim. "Is Everybody Crazy?" *The New York Observer*, New York, October 20, 1997. cited in Lasn. *Culture Jam: How to Reverse America's Suicidal Consumer Binge - and Why We Must*. p. 9.
[1133] Lasn. *Culture Jam: How to Reverse America's Suicidal Consumer Binge - and Why We Must*. p. 9.

- Rates of suicide, unipolar disorder, bipolar disorder, and alcoholism have all climbed significantly.
- Cross-cultural data show that as Asian countries Americanize, their rates of depression increase accordingly.
- Mood disorders have increased in each successive generation in the U.S. throughout the twentieth century.[1134]

According to the World Health Organization, depression will be the second-leading cause of disability in the world by 2020, after heart disease.[1135] And, according to the Canadian Paediatric Society, suicide is the second leading cause of death in Canadian teens.[1136]

Mental health problems are becoming increasingly common in Canada. In a recent report on mental illnesses, Health Canada gives a brief definition:

> Mental illnesses are characterized by alterations in thinking, mood or behaviour (or some combination thereof) associated with significant distress and impaired functioning. The symptoms of mental illness vary from mild to severe, depending on the type of mental illness, the individual, the family and the socio-economic environment[1137]

Data from Health Canada find that mental illnesses affect people of all ages, educational levels, income levels, and cultures, and that all Canadians are indirectly affected through illness of a family member, friend, or colleague. As well, 20% of Canadians will personally experience a mental illness during their lives. A brief list of statistics from Health Canada points out the severity of the situation:

- In 1999, 3.8% of all admissions in general hospitals (1.5 million hospital days) were due to anxiety disorders, bipolar disorders, schizophrenia, major depression, personality disorders, eating disorders, and suicidal behaviour.
- Hospitalization rates for bipolar disorder in general hospitals are increasing among women and men between 15 and 24 years of age.
- Approximately 8% of adults will experience major depression at some time in their lives. [Based on Canada's population of almost 32,500,000, more than two and a half million Canadians will experience a major depression in their lifetimes.[1138]]

[1134] Ibid.

[1135] CBC News. *Indepth: Depression Medications*, 2004; accessed March 2005; available from http://www.cbc.ca/news/background/drugs/depression.html.

[1136] Canadian Paediatric Society. *Mental Health*, 2005; accessed December 2005; available from http://www.healthygenerations.ca/Interest/Mental_Health.htm.

[1137] Health Canada. *A Report on Mental Illnesses in Canada*, 2002; accessed March 2005; available from http://www.phac-aspc.gc.ca/publicat/miic-mmac/pdf/men_ill_e.pdf. p. 7.

[1138] Statistics Canada. *Canada's Population Clock*, 2005; accessed December 2005; available from http://www.statcan.ca/english/edu/clock/population.htm.

- Anxiety disorders affect 12% of the population [or 3,900,000 people], causing mild to severe impairment.
- Worldwide, major depression is the fourth most important cause of disability-adjusted life years (DALYs).[1139]

Statistics from the Canadian Mental Health Association (CMHA) show a higher prevalence of depression and anxiety among the Canadian population than do those from Health Canada.[1140] According to a survey for CMHA, conducted by Leger Marketing between December 2002 and January 2003 on a sample of 1,500 Canadian adults 18 years or older, 67% of Canadians say they have had experience with depression or anxiety, 36% say they have experienced it themselves, and 64% say they know someone who has depression or anxiety. Furthermore, CMHA research shows:

- People in Quebec are least likely to have experienced depression or anxiety personally (24% of adults), while people in Alberta and British Columbia are most likely to have experienced personal depression (46% for both provinces). This compares to 31% of adults in Atlantic Canada, 38% in Ontario, and 41% in the Prairies.
- Women are more likely to have experienced depression or anxiety personally (40% of women versus 32% of men).
- People under 25 and over 65 are least likely to say they have suffered from depression or anxiety (27% and 29% respectively), when compared to those 25 to 54 years old (39%).
- Depression and anxiety are thought to have an impact on a person's life, with almost four-fifths of people (79%) believing this impact to be strong and 14% believing the impact to be slight. Only 4% feel that depression and anxiety have no impact on a person's life.
- People living in Atlantic Canada are slightly less likely to think depression and anxiety have a strong effect on people's lives (70%), compared to 74% of adults in the Prairies, 77% in Ontario, 79% in B.C., and 84% in both Alberta and Quebec.
- More than three-quarters (78%) of Canadians believe that depression and anxiety have a strong impact on a person's success at their job. Only 16% say this impact would be slight, and 2% believe there would be no impact at all.
- Almost one-half (49%) of those who feel they have suffered from depression or anxiety have never gone to see a doctor about this problem.[1141]

Although the Leger/ CMHA survey did not ask about the impact of depression and anxiety on learning and education, it is reasonable to assume that if these afflictions adversely affect people's lives and job performance, they similarly interfere with learning

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[1139] Health Canada. *A Report on Mental Illnesses in Canada*, accessed. pp. 7–8.
[1140] Leger Marketing. *Effects of Depression and Anxiety on Canadian Society*, Canadian Mental Health Association, 2003; accessed March 2005; available from http://www.cmha.ca/bins/content_page.asp?cid=5-34-183&lang=1.
[1141] Ibid., accessed. p. 1.

processes. As we previously noted, learning takes time and is enhanced within a learning environment that allows people time for learning.

10.1.2 Insomnia

People with insomnia, who have problems going to sleep or staying asleep, often have trouble concentrating, remembering or accomplishing daily tasks, which are skills needed for learning. Research has found close ties between insomnia and stress, as well as chronic conditions such as arthritis that involve pain.[1142] For example, a recent study from Statistics Canada found that life stress was a major factor in insomnia.

The study estimated 3.3 million Canadians (13.4% of the household population aged 15 or older), or about one in every seven adults, suffer from insomnia.[1143] The prevalence rate was based on data from the 2002 Canadian Community Health Survey (CCHS): Mental Health and Well-being, which specifically asked respondents how often they had trouble going to sleep or staying asleep. Those considered to have insomnia answered either "most of the time" or "all of the time." "Close to a quarter (23%) of people who described most of their days as being either "quite a bit" or "extremely" stressful reported insomnia; this was more than twice the percentage for people who reported little or no life stress."[1144]

10.1.3 Prescription drug use

The above statistics also point out that happiness does not seem to be an outcome of learning within Western societies. Anti-depressants constitute a substantial portion of rising drug use. In a 2004 report for the Public Health Agency of Canada, Higgins, Duxbury, and Johnson found that drug costs were the fastest growing component of health care expenditures.[1145] Between 1993 and 2001, drug costs rose from $9.884 billion to $15.5 billion. Higgins, et al. note that the 1998–99 National Population Health Survey found that painkillers, taken by 65% of Canadians in the month prior to the survey, were the most common medication taken; sleeping pills and tranquilizers were taken by 5% of adults; and antidepressants were taken by 4% of adults.

In 2000, almost 63% of the drugs sold were for prescription medications. This is a sharp increase from 1995, when 43% of drugs sold were prescriptions.[1146] Higgins, et al. also note that, BCE Emergis, one of North America's leading providers of e-commerce

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[1142] Tjepkema, Michael. "Insomnia," *Health Reports*, vol. 17, no. 1, 2005: 9-25, Catalogue no. 82-003, Statistics Canada.
[1143] Ibid.
[1144] Ibid. p. 13.
[1145] Higgins, Duxbury, and Johnson. *Report Three: Exploring the Link between Work–Life Conflict and Demands on Canada's Health Care System*, accessed. p. xi.
[1146] Ibid., accessed. p. 42.

services for the health care and financial services industries, reported "8.7% of its paid claims (or $8.7 million) were for prescriptions used to treat depression. This was the largest drug category in its 2001 listing of the 20 'most expensive disease states.'"[1147]

10.1.4 Attention Deficit Hyperactivity Disorder (ADHD)

Children with Attention Deficit Hyperactivity Disorder (ADHD) suffer from a higher than normal incidence of anxiety / depression and learning disorders.[1148] Wadell and Shepherd, in a 2002 report, found the overall prevalence rate for mental disorders in children and youth in Canada is approximately 15% (or more than one million children and youth).[1149] According to the Canadian Paediatric Society, the most common clinically important mental disorders in children and youth, which cause both significant symptoms and impairment, are anxiety and depressive disorders, which often manifest in poor conduct and attention.[1150]

Currie and Stabile report that ADHD is the most common chronic mental health problem among young children.[1151] They note that an increasing number of children in Western countries are hyperactive and unable to sit still unless they are being entertained, are unfocused and unable to concentrate, and are inattentive and impulsive in school.[1152] Currie and Stabile also found that children with high hyperactivity scores have outcomes that are worse in all of the measured dimensions including reading and math scores and grade repetition.

Data from the Canadian National Longitudinal Survey of Children and Youth (NLSCY) asked a set of eight questions relevant to ADHD, from which Currie and Stabile generated a hyperactivity score that captures a set of ADHD symptoms and is not dependent on whether the child had been diagnosed with ADHD. They found that approximately 14% of children surveyed in the NLSCY are hyperactive.[1153]

Children often are diagnosed subjectively for ADHD based on their behaviour in school. Increasingly they are given psychiatric drugs (primarily methylphenidate, or Ritalin and Prozac), which a recent article in the *Canadian Journal of Education* called the

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[1147] Ibid., accessed. p. 13.
[1148] Currie, and Stabile. *Child Mental Health and Human Capital Accumulation: The Case of ADHD*, accessed.
[1149] Waddell, Charlotte, and Cody Shepherd. *Child and Youth Mental Health Research Reports: 3. Prevalence of Mental Disorders in Children and Youth*, The University of British Columbia, 2002; accessed December 2005; available from http://www.childmentalhealth.ubc.ca/publications/index.cfm?fuseaction=Records.userall&TitleByID=40.
[1150] Canadian Paediatric Society. *Mental Health*, accessed.
[1151] Currie, and Stabile. *Child Mental Health and Human Capital Accumulation: The Case of ADHD*, accessed.
[1152] Ibid., accessed.
[1153] Ibid., accessed.

"expanding psycho-pharmaceutical intervention of medicine into education."[1154] Again it is noteworthy that conventional indicators of educational attainment take no account of this highly significant trend. From a wellbeing perspective, however, efforts must be made to assess these trends with the recognition that higher rates of hyperactivity, ADHD, and psychiatric drug use by children do not constitute progress. Fortunately, the NLSCY does provide the capacity to quantify some of these trends.

The NLSCY data show that use of Ritalin by children has increased significantly since 1994. For example, between 1994 and 1998 the incidence of Ritalin use increased from 2.5% of 10 year olds to 4.1% of 10 year olds, while among 11 year olds, Ritalin use tripled from 1.3% to 3.9%.[1155] In 1998, 10% of 11 year old boys in some communities in British Columbia were found to be taking Ritalin. Schissel and Wotherspoon report in the *Canadian Journal of Education* that Sweden banned Ritalin in 1968, while in the United States, the use of psychiatric drugs in two- to four-year olds increased 50% between 1991 and 1995, and in Canada the use of these drugs in general increased 4.6 times between 1990 and 1996.[1156]

Waddell, et al. argue that a web of interacting factors likely causes these disorders. There is little consensus concerning actual causes, but evidence indicates that children of anxious parents are more likely to experience anxiety.[1157] If anxiety and depression adversely affect the lives and job performance of adults as the Leger/ CMHA survey indicates, then it is highly likely that anxiety and depression in children adversely affect their learning and educational attainment.

10.1.5 Information overload

Conventionally, the availability of "more" information is regarded as progress and beneficial for educational outcomes. Indeed, used with discernment, the value and utility of large quantities of information easily and readily available is undeniable. However, there is substantial emerging evidence indicating that stress and anxiety is often associated with environments where "information overload" is prominent, which can manifest in physical symptoms that in turn adversely affect mental functioning and learning capacity. From the psychological perspectives of Lewis, Csikszentmihalyi, and

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[1154] Schissel, Bernard, and Terry Wotherspoon. "The Business of Placing Canadian Children and Youth 'at-Risk'," *Canadian Journal of Education*, vol. 26, no. 3, 2001; accessed March 2005; available from http://www.csse.ca/CJE/Articles/FullText/CJE26-3/CJE26-3-Wotherspoon.pdf.

[1155] Currie, and Stabile. *Child Mental Health and Human Capital Accumulation: The Case of ADHD*, accessed.

[1156] Schissel, and Wotherspoon. "The Business of Placing Canadian Children and Youth 'at-Risk'." accessed.

[1157] Waddell, Charlotte, Rebecca Godderis, Josephine Hua, Kimberley McEwan, and William Wong. *Preventing and Treating Anxiety Disorders in Children*, University of British Columbia, 2004; accessed December 2005; available from http://www.childmentalhealth.ubc.ca/documents/publications/Mheccu_anxiety_June04.pdf.

others, as we see below, information and data overload may actually interfere with educational processes, make wise decision-making more difficult, and even help destabilize the mind.

Psychologist Mihaly Csikszentmihalyi notes that when challenges are greater than a person's skills, as in the case of "information overload," wellbeing is replaced by anxiety, loss of control, and especially stress, which all increase a range of psychological, physical, and social problems.[1158] He believess that the inability to consider all of the information and options needed in order to make informed decisions also increases tension and stress, and can lead to social and institutional inertia.

Psychologist David Lewis proposed the term "Information Fatigue Syndrome" to describe symptoms of overload and increasing complexity, which include:

> anxiety, poor decision-making, difficulties in memorizing and remembering, reduced attention span, reduced work satisfaction, strained relations with collaborators, […] helplessness, depression, and the increasingly common 'burn-out' syndrome, […] alienation, a feeling of powerlessness, meaninglessness and lack of understanding and […] loss of confidence in institutions, such as governments, police, law, companies and churches, that are seen to fail in their function of controlling these complexities.[1159]

10.1.6 Role overload in the workplace

As noted above, mental functioning and learning capacity are decreased by pressure for high performance and information overload that often result in stress and anxiety. Higgins, Duxbury, and Johnson have been researching the connections between work-life balance and health status in Canada for a number of years, especially in the environment of role overload. In 2001, they conducted a survey of 31,571 Canadian employees who work for medium to large organizations, having 500 or more employees, in three sectors of the economy: public (federal, provincial/ territorial, and municipal governments), private, and non-profit organizations in the health care and educational sectors.[1160] The survey included 100 organizations in total, and approximately half of the respondents were highly educated male and female knowledge workers (e.g., managers and professionals).

[1158] Csikszentmihalyi, Mihaly. *Flow: The Psychology of Optimal Experience*, New York: Harper and Row, 1990.
[1159] Lewis, David cited in Heylighen. *Complexity and Information Overload in Society: Why Increasing Efficiency Leads to Decreasing Control*, accessed. pp. 13–14.
[1160] Higgins, Duxbury, and Johnson. *Report Three: Exploring the Link between Work–Life Conflict and Demands on Canada's Health Care System*, accessed.

They found, in part, that the majority of workers experience role overload, which they defined as follows:

> Role overload is having too much to do in a given amount of time. This form of work–life conflict occurs when the total demands on time and energy associated with the prescribed activities of multiple roles are too great to perform the roles adequately or comfortably. The majority of employees in our sample (58%) are currently experiencing high levels of role overload. Another 30% report moderate levels of role overload. Only 12% of the respondents in this sample report low levels of overload. Our research suggests that the proportion of the workforce experiencing high levels of role overload has increased substantially over time (i.e. by approximately 11%).[1161]

Higgins, et al. also found that employees who have high levels of role overload are in poorer physical and mental health and use the health care system more than those with low levels of role overload. Specifically, they found:

> Compared to their counterparts with low levels of role overload, employees with high role overload are: 2.9 times more likely to say their health is fair / poor, 2.6 times more likely to have sought care from a mental health professional, 2.4 times more likely to have received care on an outpatient basis, 1.9 times more likely to have spent more than $300 per year on prescription medicine for their personal use, 1.8 times more likely to have made 6 or more visits per year to a physician, 1.6 times more likely to have made 8 or more visits per year to another health care professional, 1.5 times more likely to have required inpatient hospital care, and 1.4 times more likely to have visited a hospital emergency room.[1162]

These results again demonstrate the challenge of devising appropriate indicators for educational attainment. Conventionally, high performance levels are positively regarded as a sign of attainment. But the perils of over-performance and its mental consequences remain invisible in these conventional indicators. Despite the documented adverse effects of information and role overload, it is very challenging to produce an indicator or measure of progress for this factor. However, it is important to be aware of the mental and physical risks involved with role and information overload.

[1161] Ibid., accessed., p. xii.
[1162] Ibid., accessed., p. xvi.

11. Safety and Security in Schools

The quality of the learning environment in schools is highly influenced by the level of safety and security experienced by both teachers and students. Fortunately, this area is unlikely to be relevant to Bhutan, but it has become an issue of concern in Canada and the U.S., and other areas worldwide. If teachers and students do not feel fundamentally safe, they will be concerned about basic survival and are unlikely to be able to turn their attention fully and properly to teaching and learning. Despite the concerns about school crime, especially in light of the recent spate of highly publicized school shootings in both Canada and the U.S., the aggregate and comparative evidence indicates that schools, in general, are still among the safest places to work and study for both children and adults. According to the International Labour Organization (ILO), from the perspective of educators, violence in the education sector has never been at a level comparable to violence in other workplace sectors.[1163] The same is true for students.[1164]

However, despite the relative safety of schools, the average, comparative, and aggregate statistics are small comfort for teachers and students who work and study in high crime neighbourhoods and in schools with high levels of violence. According to the ILO, violence is still a serious cause for concern in some schools:

> The intensive interactions between school heads, teachers and students over learning methods and outcomes, and pupil indiscipline that is often due to external factors, create tensions that are sources of violence, particularly at secondary levels. The isolation of teachers, alone in most classrooms, plays a role. Teachers may also be perpetrators of violence against students. Moreover, harassment and bullying among students themselves at virtually all levels of education, and external factors such as drugs, poverty and ethnic, racial or religious conflict, create a climate of violence which may have repercussions on staff. Occasional violence arises from firearms used against students and staff either by disaffected students or persons external to an education site, who gain entrance to what is often an unprotected workplace.[1165]

[1163] Verdugo, Richard, and Anamaria Vere. *Working Paper: Workplace Violence in Service Sectors with Implications for the Education Sector: Issues, Solutions and Resources*, Geneva: Sectoral Activities Programme, International Labour Office (ILO), 2003. p. 14.

[1164] National Center for Education Statistics. *Executive Summary: Indicators of School Crime and Safety: 2005*, NCES, 2005; accessed October 2006; available from http://nces.ed.gov/programs/crimeindicators/index.asp?ShowFileName=Exec_Summ.asp.

[1165] International Labour Organization. *Education: Sector-Specific Information on Violence and Stress*, Geneva, ILO, 2003; accessed October 2006; available from http://www.ilo.org/public/english/dialogue/sector/themes/violence/educat.htm.

In Canada, there is very little data available on the incidence of violence in schools, or on the relative safety and security of schools. Data on the incidence of school-related bullying is available from the Canadian Initiative for the Prevention of Bullying, and a few provincial teachers' federations have conducted surveys and provide data on self-reported school crime and bullying. There are also various sources of youth and adult crime statistics in general, including the National Crime Prevention Centre, and the Canadian Centre for Justice Statistics.

In 2005, a Canadian study produced a literature review on causes of teacher stress including workload, class size, student behaviour problems, inadequate administrative support, lack of professional training, lack of resources, teaching outside the area of specialization, time pressures, and evaluation apprehension.[1166] The study noted a number of recent Canadian surveys, including one from the B.C. Teachers' Federation and another by the Canadian Teachers' Federation, which looked at the incidence of violence in schools.

For example, the survey of British Columbia teachers reported increasing teacher concerns about violence. The survey, which defined violence as "any threatened, attempted, or actual harm," found that 49.5% of respondents experienced some form of violence in 1997–1998 and 83.3% had experienced violence at some point in their careers. The prevalence of actual physical violence in 1997–1998 was 4.5%, and 12.4% of respondents reported they had experienced actual physical violence at some point in their careers. Among those who reported actual physical violence, only 4.9% reported that the violence led to physical injury.[1167]

In addition, in 2001, the Canadian Teachers' Federation (CTF) conducted the *Canadian Teachers' Workplace Survey,* which found that 79% of respondents indicated they witnessed a violent incident in 2000–2001. In addition, roughly two-thirds of educators reported witnessing verbal abuse directed at a teacher by a student and 48% witnessed verbal abuse directed at teachers by parents. Nearly 30% reported witnessing a student physically assaulting or physically intimidating a teacher.[1168]

According to the ILO, trends regarding the incidence of violence in schools vary by country. For example, U.S. data indicate that violence within schools is decreasing, which may be surprising, considering recent gun-related violence.[1169] According to the U.S.

[1166] Younghusband, Lynda J. "High School Teachers' Perceptions of Their Working Environment in Newfoundland: A Grounded Theory Study," thesis, Clinical Epidemiology, The Faculty of Medicine, Memorial University, 2005. p. 22.

[1167] Ibid.thesis. B.C teacher survey cited in Lyon, D., & Douglas, K. (1998). Violence against British Columbia teachers. Report of the Simon Fraser University/British Columbia Teachers' Federation on Violence Against Teachers Survey.

[1168] Ibid.thesis. Canadian Teachers' Federation survey cited in Canadian Teachers' Federation (2001). Canadian Teachers' Workplace Survey, Economic Services Bulletin No. 3. Ottawa.

[1169] Verdugo, and Vere. *Working Paper: Workplace Violence in Service Sectors with Implications for the Education Sector: Issues, Solutions and Resources*. p. 14.

National Center for Education Statistics (NCES), data show trends in student victimization decreasing over the last decade.[1170] For example, between 2002 and 2003 there were 15 homicides and 8 suicides of school-age youth (ages 5–19) at schools in the United States. This translates to less than 1 homicide or suicide of school-age youth at school per million students enrolled during the 2002–2003 school year. Ten years earlier, in 1992–1993, there were 34 homicides and 6 suicides of school-age youth.[1171] According to the NCES, between 1992 and 1999, no consistent pattern of increase or decrease was observed in the number of homicides at school—during this period, between 28 and 34 homicides of school-age youth occurred at schools in each school year. However, the number of homicides of school-age youth at school declined between the 1998–1999 and 1999–2000 school years from 33 to 14 homicides. In terms of suicides of school-age youth, between one and eight committed suicide at school each year between 1992 and 2002, with no consistent pattern of increase or decrease. "In each school year, youth were over 70 times more likely to be murdered and 240 times more likely to commit suicide away from school than at school."[1172]

The NCES also provides data on non-fatal teacher victimization in the U.S. between 1999 and 2003. However, because the data for this time period are combined, it is not possible from the publicly available data to determine a 5-year trend for this indicator. In any case, the data indicate that from 1999 through 2003, male teachers were twice as likely as female teachers to be victims of violent crimes (22 vs. 11 crimes per 1,000 teachers, annually). Senior high school teachers were more than twice as likely as elementary school teachers to be victims of violent crimes (22 vs. 9 violent crimes per 1,000 teachers, annually). In addition, over the five year period, urban teachers were more than twice as likely as rural and suburban teachers to be victims of violent crimes (20 vs. 9 and 7 crimes per 1,000 teachers, respectively). No differences were detected in the likelihood of teachers being victimized by violent crime according to their race/ ethnicity.[1173]

[1170] The National Centre for Education Statistics in the U.S. uses several indicators to measure student and teacher victimization rates but, due to limitations in both time and resources, we are unable to report on all of these trends here. For more information on these data, please refer to the NCES Web site. National Center for Education Statistics. *Executive Summary: Indicators of School Crime and Safety: 2005*, accessed.

[1171] National Center for Education Statistics. *Indicator 1: Violent Deaths at School and Away from School*, NCES, 2005; accessed October 2006; available from http://nces.ed.gov/programs/crimeindicators/Indicators.asp?PubPageNumber=1 - fig1.2. According to the NCES definition, "a school-associated violent death is a homicide, suicide, legal intervention (involving a law enforcement officer), or unintentional firearm-related death in which the fatal injury occurred on the campus of a functioning elementary or secondary school in the United States. Deaths that occurred while the victim was on the way to or from regular sessions at school, or while the victim was attending or traveling to or from an official school-sponsored event, were also considered school-associated violent deaths."

[1172] Ibid., accessed.

[1173] National Center for Education Statistics. *Indicator 5: Nonfatal Teacher Victimization at School*, NCES, 2005; accessed October 2006; available from http://nces.ed.gov/programs/crimeindicators/Indicators.asp?PubPageNumber=5 - fig5.1.

In some other countries, on the other hand, the ILO notes that violence seems to be on the rise. However, it is again unclear, based on the single-year data provided by the ILO, whether this is in fact the case.[1174]

One type of school violence that has attracted a great deal of media attention is bullying. The Canadian Initiative for the Prevention of Bullying, at York University's LaMarsh Research Centre, is a source of a great deal of research on bullying in Canadian schools, which has produced some initial statistics on bullying incidence.[1175] A number of the researchers at the Centre have been involved in a large-scale international study on the subject by the World Health Organization involving 34 countries, including Canada. In a 2004 study, roughly 7,200 Canadian students from grades 6 to 10 (aged 10 to 16) were surveyed. The survey found that 23% of Canadian youth in these grades reported that they bullied others. A small number—1% to 6%—reported bullying on a regular basis (at least once a week or more). Between 8% and 16% of adolescents reported being bullied once or twice a term. Between 2% and 8% reported being bullied at least once a week.[1176] The U.S. National Center for Education Statistics found that in 2003, 7% of students aged 12 to 18 reported they had been bullied at school during the previous six months, up from 5% in 1999.[1177]

In 2005, a survey of teachers was commissioned by the Elementary Teachers' Federation of Ontario (EFO), the Ontario English Catholic Teachers' Association (OECTA), and the Ontario Secondary School Teachers' Federation (OSSTF). In the survey, bullying was defined as "persistent or repeated verbal abuse, threats, insults or humiliation that has the specific intent of hurting others." From the perspective of the teachers being surveyed, bullies could be colleagues, administrators, parents/ guardians, or students.[1178]

The survey found that 38% of teachers (both elementary and secondary) in Ontario have been bullied by their students. In addition, 41% of those bullied by students have had their personal belongings or property vandalized, and 27% have been threatened or physically assaulted on more than one occasion. The survey also contained a line of questioning about physical violence in Ontario's elementary and secondary schools. Overall, 7% of respondents have been a target of physical violence or assault at their school, 92% reported they had not experienced physical violence, and 1% were uncertain.

[1174] Verdugo, and Vere. *Working Paper: Workplace Violence in Service Sectors with Implications for the Education Sector: Issues, Solutions and Resources*. pp. 14–15.

[1175] Canadian Initiative for the Prevention of Bullying. *Bullying in Canada*, Toronto, Canadian Initiative for the Prevention of Bullying, LaMarsh Research Centre, York University, 2004; accessed October 2006; available from http://cipb.ca/research/communiques/BullyingInCanada.html.

[1176] Canadian Adolescents At Risk Research Network. *Adolescent Bullying*, 2004; accessed October 2006; available from http://educ.queensu.ca/~caarrn/pdf/Adolescent Bullying.pdf.

[1177] National Center for Education Statistics. *Indicator 12: Bullying at School*, NCES, 2005; accessed October 2006; available from http://nces.ed.gov/programs/crimeindicators/Indicators.asp?PubPageNumber=12.

[1178] Matsui, James, and Lang Research. *Bullying in the Workplace Survey*, Toronto: Ontario Secondary School Teachers's Federation (OSSTF), Elementary Teachers' Federation of Ontario (ETFO), and Ontario English Catholic Teachers' Assocation (OECTA), 2005. p. 1.

The report notes that due to the small sample size, the statistics must be interpreted very cautiously.[1179]

The 2005 Ontario teachers' survey also found that among secondary school teachers surveyed, 37% were bullied by students, 20% were bullied by a parent or guardian, 25% were bullied by a person in a superior position (i.e., principals, vice-principals, administrators, or supervisors), and 18% were bullied by a colleague.[1180]

Of the 37% of secondary school teachers in Ontario who reported being bullied by students, 82% have been subject to repeated workplace disruptions or repeated disrespectful behaviour, 38% have had their belongings vandalized, 27% have been threatened with physical assault, 20% experience persistent verbal abuse, 16% experience repeated intimidation, and 14% experience repeated racial or sexual slurs.[1181]

The issue of violence in schools is a complex one. While some teachers' federations make the claim that violence in schools is increasing, most of the surveys to date have been one-time only affairs, and therefore changes over time are not possible to assess. Further, it is unclear from these surveys whether the actual incidence of violence in schools is in fact increasing, or whether it is the perception of violence or insecurity that is in fact increasing.

In addition, it is also unclear to what degree the data reflect the increased reporting of violence. For example, there is some evidence that "zero-tolerance" policies adopted by some school boards may have resulted in increased reporting of schoolyard fights, for instance. Another difficulty is that while youth crime statistics are available from Statistics Canada's Canadian Centre for Justice Statistics, it is not possible from those data to ascertain what proportion of youth crime takes place at schools.

These and similar questions must be examined in a more in-depth exploration and discussion on safety and security in Canadian schools before a clear indicator on the subject can be developed. Due to limitations in both time and resources, we were unable to explore these and other complex questions on school violence at this time, but we recommend that such systematic research be undertaken with a view to future development of reliable indicators in this area. Some possible directions for indicator development on the issue of school safety and security are briefly noted below.

Unfortunately, consistent national data on school violence and bullying trends over time are not available, so neither provincial comparisons on bullying incidence nor

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[1179] For example, of the 411 randomly selected OSSTF members surveyed, roughly 7% or 28 members in total (teachers and support staff), had experienced physical violence.

[1180] Matsui, and Research. *Bullying in the Workplace Survey*. pp. 4–5. The report also provided overall data for the incidence of bullying among "federation members," which include teachers and support staff.

[1181] Ibid. p. 7. There are also specific forms and incidences of bullying by superiors, parents / guardians, and colleagues that are discussed in detail in the study.

construction of trend lines are possible at this stage. Given the high rates of school violence and bullying reported by teachers in the British Columbia, Ontario, and Canadian Teachers' Federation surveys noted above, the collection, compilation, and reporting of such data on a regular basis in Canada seems important.

11.1 Indicators of school safety and security

According to the ILO, except for the U.S., most countries do not collect national statistics on school violence. Outside the U.S., most data that are collected pertain to bullying, insecurity, or problems regarding vandalism or theft. As a result, international comparisons on school violence are not presently possible.[1182]

In terms of measuring safety and security of students and teachers in Canadian schools, there are currently no indicators in this area developed by the Pan-Canadian Education Indicators Program (PCEIP).[1183]

As previously mentioned, a survey of Grade 8 students was conducted in 1995 in Atlantic Canada to rate the "quality of their school lives," and "to gather information about the attitudes of students toward their schooling experience." Students were asked to either agree or disagree with provided statements. One of the statements, which dealt with safety and security was "I feel safe from personal harm." Overall, 69% of the Atlantic Canadian Grade 8 students surveyed agreed with this statement. On the other hand, 55% of the students agreed with the statement "students pick on each other all the time."[1184] This is interesting because it again highlights the complexity of the issue of student violence noted above—since there is clearly a continuum of abuse that may range from "picking on" others, to bullying, to threats, to outright violence. A systematic classification of these different grades of abuse is needed for the development of a consistent national data set and indicators in this area.

Based on these 1995 Atlantic Canadian Grade 8 survey results alone, it was not possible to assess any trends in students' perception of safety over time in Atlantic Canada, since the responsibility for any follow-up surveys or reporting of that nature was left to each of the four Atlantic provinces' separate departments of education, and to date no follow surveys have been conducted on this subject in any of the four provinces.[1185]

[1182] Verdugo, and Vere. *Working Paper: Workplace Violence in Service Sectors with Implications for the Education Sector: Issues, Solutions and Resources*. p. 14.

[1183] Statistics Canada. *Report of the Pan-Canadian Education Indicators Program 2005 – Highlights*, Ottawa, Statistics Canada, 2006; accessed October 2006; available from http://www.statcan.ca/english/freepub/81-582-XIE/2006001/highlights.htm - C.

[1184] Atlantic Provinces Education Foundation. *Education Indicators for Atlantic Canada*, Halifax: Atlantic Provinces Education Foundation, 1996.

[1185] Poirier, Rheal, Secretary, Council of Atlantic Ministers of Education and Training, personal communication with Linda Pannozzo, Telephone conversation, August 14, 2006.

In the U.S., data on student and teacher victimization and school crime in general are collected by a number of independent sources including the Bureau of Justice Statistics (BJS), the National Center for Education Statistics (NCES), the Federal Bureau of Investigation (FBI), and the Centers for Disease Control and Prevention. In a 2005 report on *Indicators of School Crime and Safety*, the NCES compiled data from a nationally representative sample of surveys, including the National Crime Victimization Survey's School Crime supplement, the School Survey on Crime and Safety, Schools and Staffing Survey, and the Youth Risk Behavior Surveillance System.[1186]

Indicators of School Crime and Safety is the eighth such report produced by the NCES and BJS since 1998. The report is not intended to explore the reasons for school violence and is also not an exhaustive compilation of school crime statistics. However, trend lines are provided where possible. According to the NCES:

> For parents, school staff, and policymakers to effectively address school crime, they need an accurate understanding of the extent and nature of the problem. However, it is difficult to gauge the scope of crime and violence in schools given the large amount of attention devoted to isolated incidents of extreme school violence. Measuring progress toward safer schools requires establishing good indicators of the current state of school crime and safety across the nation and periodically monitoring and updating these indicators.[1187]

The following is a list of the 21 indicators used by the NCES:

1. Violent deaths at school and away from school
2. Incidence of victimization at school and away from school
3. Prevalence of victimization at school, ranging from theft to violent crimes.
4. Threats and injuries with weapons on school property
5. Nonfatal teacher victimization at school
6. Teachers threatened with injury or attacked by students
7. Violent and other incidents at public schools and those reported by police
8. Discipline problems reported by public schools
9. Students' reports of gangs at schools
10. Students' reports of drug availability on school property
11. Students' reports of being called hate-related words and seeing hate-related graffiti
12. Bullying at school
13. Physical fights on school property or anywhere
14. Students carrying weapons on school property and anywhere
15. Students' use of alcohol on school property and anywhere

[1186] National Center for Education Statistics. *Executive Summary: Indicators of School Crime and Safety: 2005*, accessed. p. 3.
[1187] Ibid., accessed. p. 1.

16. Students' use of marijuana on school property and anywhere
17. Students' perceptions of personal safety at school and away from school
18. Students' reports of avoiding school activities or specific places in school
19. Serious disciplinary actions taken by public schools, including suspensions and transfers to specialized schools
20. Safety and security measures taken by public schools
21. Students' reports of safety and security measures observed at school

For each of the above indicators, the NCES has provided data, trend lines where possible, and data sources. Reporting on each of these indicators is well beyond the scope of this literature review. However, this information is readily available from the NCES Web site.[1188]

It is important to note that many of the indicators used by the NCES are based on self-reported survey data. According to the NCES, there are a number of limitations inherent to these data, which can affect precision. They include the following:

- Unless a reference period is established in the interview, estimates may include events that exceed the scope of the specified reference period, which may artificially increase reports because respondents may recall events outside of the given reference period.
- Many of the surveys rely on the respondent to 'self-determine' a condition. This allows the respondent to define a situation based upon his or her own interpretation of whether the incident was a crime or not.
- Victim surveys emphasize crime events as incidents that take place at one point in time. However, victims can often experience a state of victimization in which they are threatened or victimized regularly or repeatedly.
- Respondents may recall an event inaccurately.[1189]

These limitations inherent in the U.S. National Center for Education Statistics data would also apply to the self-reported data available in Canada, particularly in the cases of the teachers' surveys reported above. This illustrates the need for involvement by Statistics Canada in the compilation of consistent and reliable data for Canada that could eventually be used for an indicator of school safety and security in the populace.

[1188] Ibid., accessed.

[1189] National Center for Education Statistics. *Indicators of School Crime and Safety, 2005*, NCES, 2005; accessed October 2006; available from http://nces.ed.gov/programs/crimeindicators/. p. 3.

12. Corporate Influences on Formal Education: K-12

12.1 Elementary and secondary education

We do not worry about what our children and young people learn and how well they learn it until a crisis happens along [… and] we have not yet begun to worry whether or not our children will know how to protect the biological resources upon which any economy ultimately depends.

David Orr[1190]

This crippling of individuals I consider the worst evil of capitalism. Our whole educational system suffers from this evil. An exaggerated competitive attitude is inculcated into the student, who is trained to worship acquisitive success as a preparation for his future career.

Albert Einstein[1191]

Education is the first public good that a government can confer upon a people.
Louis-Hippolyte LaFontaine[1192]

In Canada, public funding for elementary or secondary education comes either directly from the provincial or territorial government or through a mix of provincial transfers and local taxes collected either by the local government or by school boards with taxing powers.

At the local level, schools are governed by school boards, which receive money from the provinces, based on factors such as number of students, special needs, and location.[1193] Between 1992 and 2000, total school board expenditures in Canada dropped from roughly $36.9 billion to $35.9 billion, and then increased to $39.6 billion in 2003 (the most recent year for which data were available). [1194, 1195, 1196] Prior to 1993, however,

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[1190] Orr. *Ecological Literacy. Education and the Transition to a Postmodern World*. p. 83.

[1191] Einstein, Albert. "Why Socialism?" *Monthly Review*, May, 1949.

[1192] LaFontaine, Louis-Hippolyte, cited in Saul, John Ralston. *Struggling for Balance: Public Education and Civil Society*, Speech given at the University of Calgary, 2003; accessed February 24 2005; available from http://www.gg.ca/media/doc.asp?lang=e&DocID=4026. This was the public declaration by Louis-Hippolyte LaFontaine, in the Adresse aux Electeurs de Terrebonne of LaFontaine of August 28, 1840, which effectively laid the intellectual foundation for Canadian democracy.

[1193] Council of Ministers of Education Canada (CMEC). *Education in Canada*, CMEC, 2005; accessed September 22 2005; available from http://www.cmec.ca/index.en.html.

[1194] School Board expenditures have been converted to $2003 constant dollars for comparison purposes.

[1195] Statistics Canada. *School Board Expenditures, by Economic Classification, 1985 - 2000*, CANSIM Table 478-0012, Ottawa: Statistics Canada, 2005.

school board expenditures in Canada showed a steady increase. Statistics Canada data indicate that between 1985 and 1992, for instance, total school board expenditures increased from $29.9 billion to $36.9 billion, a real increase of 23%.[1197] Between 1993 and 2003, however, expenditures per student dropped from $8,184 to $7,946 (constant $2003).[1198, 1199]

The Council of Ministers of Education attributed this decline in provincial spending in the 1990s to a shift in priorities among governments seeking to eliminate deficits. Tightened purse strings, related both to cuts in the federal Canada Health and Social Transfer in 1996–97 and to spiralling health care costs, also meant that key public priorities, namely health and education, often competed for the dwindling dollars.[1200]

The decline in education dollars has resulted in two simultaneous trends at the elementary and secondary levels:

1. the increasing commercialization of education, as school boards seek alternative financial support
2. a shift in the burden of educational costs onto families and households

These will be discussed in further detail below. Again, this information is presented as an example of "worst practices," rather than of "best practices," and, although the Canadian information may not be directly relevant to the Bhutanese situation, it may be of interest—especially as a caveat concerning what to avoid

12.1.1 Commercialization of education

In 2005, the Canadian Teachers' Federation (CTF) conducted a national survey of 3,100 public schools to examine the extent and nature of commercial activities in schools and "the degree to which public funding is being replaced or supplemented by alternative funding sources" such as school fundraising. This was the first survey of its kind in Canada. The CTF and its partner organizations, the Canadian Centre for Policy Alternatives (CCPA) and the Federation des syndicats de l'enseignement (FSE in Quebec), came up with six categories of alternate funding sources, three of which involve a private/ corporate sector role in schools. These include: advertising, partnerships and

[1196] Nault, Francois. *Summary Public School Indicators for the Provinces and Territories, 1996-1997 to 2002-2003*, Catalogue no. 81-595-MIE, Statistics Canada, 2004.
[1197] Statistics Canada. *School Board Expenditures, by Economic Classification, 1985 - 2000.*
[1198] Nault. *Summary Public School Indicators for the Provinces and Territories, 1996-1997 to 2002-2003.*
[1199] Statistics Canada. "School Board Revenues and Expenditures." *The Daily*, Statistics Canada, July 28, 2000, accessed December, 2004; available from http://www.statcan.ca/Daily/English/000728/d000728e.htm.
[1200] Council of Ministers of Education Canada (CMEC). *Education Indicators in Canada. Report of the Pan-Canadian Education Indicators Program, 2003*, accessed. p. 35.

sponsorships, and corporate sponsored educational materials.[1201]

Advertising

Some of the key CTF survey findings on corporate advertising are listed below:[1202]

- For all regions, 28% of elementary schools and 55% of secondary schools reported the presence of corporate or business advertising in the school or on school buildings and walls. This is advertising which may have been provided in exchange for material goods such as school uniforms, musical instruments, computer equipment, etc.
- 5% of elementary schools and 22% of secondary schools reported that advertising space had been sold in the school.
- Coke and Pepsi were the two most prominent corporations in the schools.
- The lowest incidence of advertising is in French schools in Quebec: 21% reported the presence of advertising compared to 35% of English schools outside Quebec, 26% of English schools in Quebec, and 33% of French schools outside Quebec.

According to the American Pediatric Society, advertisements on school property are problematic because they "seem to automatically imply that the authorities, which the children rely on for an education, have endorsed the product."[1203]

Partnerships/ sponsorships

The project of transforming culture into little more than a collection of brand extensions-in-waiting would not have been possible without the deregulation and privatization policies of the last 3 decades […]. As government spending dwindled, schools, museums and broadcasters were desperate to make up their budget shortfalls and thus ripe for partnerships with private corporations […] . At first these arrangements seemed win-win: the cultural or educational institution in question received much-needed funds and the sponsoring corporation was compensated with some modest form of public acknowledgement and a tax break […]. When sponsorship took off as a stand-in for public funds in the mid-eighties, many corporations that had been experimenting with the practice ceased to see

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[1201] Canadian Teachers' Federation. *Commercialism in Canadian Schools - a National Survey. Summary of Findings*, Ottawa: Canadian Teachers' Federation. Personal Communication. Summary Findings provided by CTF researcher Bernie Froese-Germain via email. September, 2005. Unpublished summary was provided by CTF researcher Bernie Froese-Germain in a personal communication September 16, 2005, prior to the release of the full CTF report in spring 2006. The survey and report were joint initiatives of the Canadian Teachers' Federation, the Canadian Centre for Policy Alternatives (CCPA), and the Federation des syndicates de l'enseignement (CSQ). The remaining two categories deal with other private funding sources, such as fundraising and user fees. All data are for the 2003/2004 school year.

[1202] Ibid.

[1203] American Pediatric Society cited in Coffin, Steve. "This Isn't Charity." *The National Post*, North Vancouver, December 22, 2004 A-21, A.

sponsorship as a hybrid of philanthropy and image promotion and began to treat it more purely as a marketing tool, and a highly effective one at that.

Naomi Klein[1204]

Exclusive contracts with beverage companies are perhaps one of the single most prevalent forms of partnership between public schools and private firms. The 2005 survey conducted by the Canadian Teacher's Federation found that in the secondary schools surveyed, Coke holds 31% of exclusive contracts compared to 25% by Pepsi; in elementary schools surveyed, Coke holds 12% of contracts compared to 7% by Pepsi; and the incidence of exclusive contracts with Coke or Pepsi is much less frequent in Quebec English or French schools—7% and 5% respectively.[1205]

According to a recent *Globe and Mail* article, vending machines and food contracts have become an important source of revenue for cash strapped school boards. For instance, revenues from these contracts often go toward paying for team uniforms and school trips. However, the article noted that at a time when obesity rates among children and teenagers have never been higher, it is difficult to justify providing sugary drinks and fatty cafeteria foods with minimal nutritional value.[1206] The article points to the recent announcement by British Secretary of Education, Ruth Kelly, that the U.K. Government intends to ban junk food high in fat, salt or sugar from all school cafeterias and vending machines by September, 2006.[1207]

David Lau, professor of medicine at the University of Calgary, says the British are moving in the "right direction."[1208] Lau is also President of Obesity Canada, a non-profit group of Canadian health professionals advocating a similar move toward serving healthy foods in Canadian schools. Information provided on Obesity Canada's Web site estimates that 10% to 25% of all Canadian teenagers have a weight problem, which brings with it associated health risks including heart attack, stroke, and diabetes.[1209]

According to *Childhood Lost: How American Culture is Failing our Kids,* it is:

> … unconscionable to promote products known to undermine children's health on school grounds especially when we consider that obesity is overtaking smoking as the number one killer in the U.S. When children associate the moral authority of

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[1204] Klein, Naomi. *No Logo: Taking Aim at the Brand Bullies*, Toronto: Vintage Canada, 2000. pp. 30–34.
[1205] Canadian Teachers' Federation. *Commercialism in Canadian Schools - a National Survey. Summary of Findings*.
[1206] Alphonso, Caroline. "Will Canada Nix Nuggets and Fries?" *Globe and Mail*, Toronto, September 29, 2005 A-1. p. A-1.
[1207] BBC News. *Junk Food to Be Banned in Schools*, London, 2005; accessed 2005 October; available from http://news.bbc.co.uk/2/hi/uk_news/education/4287712.stm.
[1208] Lau, David cited in Alphonso. "Will Canada Nix Nuggets and Fries?"
[1209] Obesity Canada. *Obesity*, 2005; accessed October 4 2005; available from http://www.obesitycanada.com.

their principals and teachers with these products, parental authority is severely compromised.[1210]

According to a 2000 GPI Atlantic report, *Cost of Obesity in Nova Scotia,* rates of overweight have more than doubled in Canada since 1985 from 13% to 29% in 1997, and Atlantic Canadians have the highest rates of overweight and obesity in the country.[1211,1212] The report also emphasizes the adverse health risks associated with obesity, which translate into significantly higher health care costs:

> It has been estimated that health promotion and disease prevention currently account for only about 2% of most provincial health budgets in Canada. Yet investment in these areas is probably the only way to reduce long-term health care costs […]. Interventions to treat illnesses are generally very disease specific. By contrast, the determinants of health are known to be highly interactive, so that a wise strategic investment in one determinant will likely have spin-off benefits in several others.[1213]

The report estimated that excess weight and obesity cost the Nova Scotia economy more than $140 million a year in productivity losses and $120 million a year in direct health costs—a total of more than $250 million a year. The report notes that in conventional GDP terms:

> [T]he five-fold global increase in adult-onset diabetes in just 13 short years, from 30 million in 1985 to 143 million in 1998, is good for the economy. It provides jobs and spurs economic growth. With the global incidence of diabetes expected to double to 300 million by the year 2025, insulin is clearly a 'growth market' for the pharmaceutical industry […].The diet and weight loss industries contribute another $33 billion to the U.S. economy annually.[1214]

Among the report's recommendations was one that schools, universities and hospitals look beyond budget considerations alone when signing cafeteria licenses. The report recommended that health and educational establishments should instead award food service contracts based on food quality and nutritional content.

[1210] Horgen, Katherine Battle. "The Obesity Epidemic," in *Childhood Lost. How American Culture Is Failing Our Kids*, ed. Olfman, Sharna. Westport: Praeger Press, 2005.

[1211] An "overweight" person is defined as someone who has a Body Mass Index (BMI) of more than 27. BMI is calculated by dividing weight in kilograms by height in metres squared. Percentages of overweight refer to the adult non-pregnant population, age 20–64.

[1212] For more detail on obesity rates see Colman, Ronald. *Cost of Obesity in Nova Scotia*, Genuine Progress Index Atlantic (GPI Atlantic), 2000; accessed October 2005; available from http://www.gpiatlantic.org. Parallel reports for seven other Canadian provinces are available on the GPI*Atlantic* website at http://www.gpiatlantic.org.

[1213] Ibid., accessed.

[1214] Ibid., accessed.

The Canadian Association for School Health (CASH) would agree. The association, composed of 12 provincial and territorial coalitions whose members promote the health of children and youth, has created a strategy to promote "Comprehensive School Health." The goals of the initiative are to promote health and wellness; to prevent specific diseases, disorders and injury; to intervene to assist children and youth who are in need or at risk; and to help and support those who are already experiencing poor health.[1215]

In order to attain these goals, CASH argues for an integrated approach, which will influence the health related knowledge, attitudes and behaviours of students. One of the categories of health promotion is providing students with a "healthy physical environment," which includes providing "healthy food services."[1216] However, commentators have questioned whether the trend towards corporate partnerships and sponsorships supports such laudable goals.

A few illustrative cases of the potential conflict that may arise between educational and corporate goals and agendas are examined below.

In early 2005, the fast-food giant, McDonald's, partnered with 40 public schools in Nova Scotia to provide sports equipment in exchange for the students' participation in its "Olympic Fitness Challenge," to promote fitness and good nutrition. McDonald's stated goal was to encourage children to be more physically active. But some critics have argued that if health and physical activity were its true goals, then McDonald's would have simply donated the money or equipment to the schools, with no strings attached. Instead, critics have characterized the scheme as an attempt at:

> … product placement and brand recognition. It's about trying to counteract growing public concern over trans fats and obesity rates, and the horrible publicity generated by the documentary *Supersize Me*, in which filmmaker Morgan Spurlock gained 25 pounds and risked his life by eating nothing but McDonald's meals for a month.[1217]

In fact, along with the infusion of $200 worth of sports equipment per participating class, McDonald's has also been providing teachers with a "toolkit" of information about fitness and nutrition and the healthy options offered on its own menu.[1218] Critics argue that partnerships such as this provide corporations with unfettered access to children and youth to spread their "propaganda" and in this case "make more kids pester their parents

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[1215] Canadian Association for School Health. *Consensus Statement on Comprehensive School Health*, Canadian Association for School Health, n.d.; accessed October 4 2005; available from http://www.schoolfile.com/cash/consensus.htm.
[1216] Ibid., accessed.
[1217] Rodenhiser, David. "Send out the Clown." *The Daily News*, Halifax, January 23, 2005, Today's News 2. p. 2.
[1218] McDonald's Restaurants of Canada Ltd. "McDonald's Responds." *The Daily News*, Halifax, February 2, 2005, Perspective 9, Opinion. p. 9.

to buy them McDonald's food."[1219]

The controversial McDonald's partnership agreement raised some salient questions around corporate involvement in schools. Overall, the Halifax Regional School Board members were supportive of the scheme as long as it didn't conflict with "educational purposes."[1220] School Board Chairman, Wade Marshall, announced he had no concerns with a corporate-sponsored curriculum, as long as it operated within school board policies and guidelines: "Canadians have sort of embraced that everything we do has an aspect of advertising to it."[1221] Education Minister, Jamie Muir, also noted he was comfortable with McDonald's in the schools because it was in line with what the government was trying to do around promoting fitness.[1222]

NDP education critic, Bill Estabrooks, however, revealed it made him "gag" to think that Ronald McDonald was promoting good eating habits and fitness. He argues there should be a provincial policy to guide school boards and schools around decisions to get involved with corporations. "If we're going to start worrying about these little people as eager consumers as opposed to eager learners, then we've got a real conflict of interest on our hands," said Estabrooks.[1223]

In Nova Scotia, the Department of Education does have regulations governing revenue-generating activities in the schools by corporations, but the kind of partnership struck between schools and McDonald's does not fall under those guidelines, and so the decisions on corporate partnerships and sponsorships are generally made by school boards and individual schools.[1224]

One commentator pointed out that while the real motivations of McDonald's likely have more to do with selling Big Macs to youngsters than promoting fitness, it shouldn't divert attention away from the real issue, which is that governments and school boards have been woefully neglectful of student fitness levels. Removal of mandatory gym classes in senior grades, declining gym times, and lack of funding for physical education equipment means students are less physically active in school than they were—while studies indicate increased physical activity in school results in healthier students and better academic performance. According to one columnist: "[A]t least McDonald's is making an effort— ulterior motives or not—to do something about our out-of-shape and overweight kids."[1225]

[1219] Rodenhiser. "Send out the Clown."

[1220] Nicoll, Cathy. "Fries with Gym?" *The Daily News*, Halifax, January 25, 2005, Local News 4. p. 4.

[1221] Davenport, Ruth. "Muir: McDonald's Promotion OK If Students Benefit." *The Daily News*, Halifax, January 23, 2005, 6, Local News. p. 6.

[1222] Ibid.

[1223] Nicoll, Cathy. "Schools Need Business Plan – NDP." *The Daily News*, Halifax, February 2, 2005, News 2. p. 2.

[1224] Nicoll. "Fries with Gym?"

[1225] Howe, Rick. "McDonald's Fitness Flap Not the Real Problem." *The Daily News*, Halifax, February 4, 2005, Perspective 11. p. 11.

In a recent attempt to deal with the issues of high and increasing obesity rates, and the provision of affordable and accessible healthy and safe food, the Nova Scotia Department of Education and Department of Health Promotion and Protection drafted a "Comprehensive Food and Nutrition Policy" to bring healthy food choices to NS public schools.[1226] The changes include: setting standards for foods and beverages sold and served in school cafeterias; promotion of nutrition education in the curriculum; tools for parents to help their children eat a balanced diet; appropriate pricing to ensure healthy food and beverages are accessible; student involvement in planning menus; and the introduction of healthy choices in vending machines and fund raising activities.

The draft of the policy also attempted to deal with promotion and advertising in schools, and it clearly acknowledged the problematic nature of allowing corporate interests into the schoolhouse. "The business world is keenly aware of the potential to build preferences and cultivate brand loyalty by targeting schools that house a captive and impressionable audience of future consumers."[1227] The draft recommends that partnerships must be designed to meet identified educational needs and not to serve "commercial motives." The government sought public input on the policy in 2005 and hoped to have a new policy in place by the 2005/2006 school year.[1228, 1229] However, while the policy is currently in place, schools are being given three years to comply. All schools are expecte to be in line with the policy—that is, selling foods from the "maximum nutrition list"—by June, 2009.[1230] One of the elements in the policy that deals with the issue of corporate adverstising is that corporations are not allowed to put logos on scoreboards or pop machines that advertise products that don't meet the nutritional standards set out in the policy.[1231]

In some provinces, governments have turned to the private sector to fund the construction of desperately needed schools. The Toronto Parent Network survey of Ontario schools found that the majority of schools in the province were built between 1950 and 1970. The deterioration of these aging structures raises many issues around the health and safety of these buildings.[1232]

[1226] Nova Scotia Department of Education. *Food and Nutrition Policy for Nova Scotia Public Schools*, Department of Education and Department of Health Promotion, 2005.
[1227] Ibid.
[1228] Nova Scotia Department of Education. *Press Release: Input Needed for New Policy*, Department of Health Promotion and Department of Education, 2005; accessed October 17 2005; available from http://www.gov.ns.ca/news/details.asp?id=20050916010.
[1229] Nova Scotia Department of Education. *Food and Nutrition Policy for Nova Scotia Public Schools*.
[1230] Conrad, Rick. "Healthy Food in, Junk Food out, Province Tells Schools." *The Chronicle Herald*, Halifax, September 13, 2006 A1.
[1231] Nova Scotia Department of Education and Nova Scotia Department of Health Promotion and Protection. *Food and Nutrition Policy for Nova Scotia Public Schools. Policy Directives and Guidelines*, Halifax: Department of Education and Department of Health Promotion and Protection, 2006.
[1232] Toronto Parent Network. *Tracking Publicly Funded Education: The Fifth Report, Toronto Highlights*, Toronto Parent Network, 2002; accessed December 2005; available from http://torontoparent.tripod.ca/.

The situation is much the same in other provinces, including Nova Scotia, where the situation became so dire that a number of old schools were being labeled "sick" due to persistent air quality problems, and students were being bussed elsewhere for instruction.[1233, 1234] Public officials in the province decided in 1997 that the solution to funding the construction of new schools lay with the private sector. The schools would become known as P3 schools—public-private partnerships—and would involve the private infusion of capital to finance and build the schools which the province would in turn lease. Similar to leasing a car, for instance, the government would buy the school from the private contractor after the expiry of the lease on the school building.

In 2000, after 32 P3 schools had already been built and a number of others were well under way, the plan to build a total of 50 new P3 schools at a cost of $350 million through this scheme was cancelled by the governing Conservative party. The project had already cost much more than budgeted—$32 million more than planned. When the province calculated how much it would have spent had the schools been built and paid for by taxpayers' money, it was surprised to discover an estimated $2 million saving per school. According to the Canadian Centre for Policy Alternatives, the additional costs to the taxpayer resulted from the fact that private companies don't qualify for lower interest rates, which are available to the province for construction of regular schools.[1235]

In addition to the increased costs associated with building and the uncertainty around the price-tag on the buildings after the 25 or 35-year lease expires, there were other issues that surfaced with having a private owner. Provincial newspapers reported that rental fees at P3 facilities rose significantly for community groups; advertisers would have less difficulty getting into the schools; and it was unclear who was financially responsible for vandalism.[1236]

Murray Dobbin summarizes the perils of P3 schools:

> The taxpayer is responsible for the operating costs, capital improvements and repairs, and technology upgrading. The private owners were assured of receiving 89 per cent of their costs through leasing charges, and will still own the building and the land when the lease is up. Then the government has to buy the school whether or not it is still needed […]. The contract exempts the owners and the builders from any legal or financial liability for shoddy school construction, or even faulty wiring and plumbing. This was an enormous incentive for using cheap labour and low-quality materials. And, of course, since the corporation owns the

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[1233] The Hansard. Government of Nova Scotia Legislature, 1997; accessed September 28 2005; available from http://www.gov.ns.ca/legislature/hansard/han56-6/h97dec08.htm.
[1234] Hamm, Premier John. *State of the Province Address to the Halifax Chamber of Commerce*, Government of Nova Scotia, 2004; accessed September 28 2005; available from http://www.gov.ns.ca/prem/speeches/StateProvince_30_11_2004.htm.
[1235] Shaker, Erika. "The Devil in the Details: The P3 Experience in Nova Scotia Schools," *Perspectives*, vol. 4, no. 1, 2004.
[1236] Ibid.

schools, it has the right to use them and all their technology for profitable activities after hours, on weekends and during the summer.[1237]

The private sector has also been involved in the construction of school playgrounds. In 2004, for instance, Home Depot funded the construction of an elementary school playground in North Vancouver. According to a report in the National Post, the partnership with the school involved more than most parents bargained for. In exchange for the playground, the school put up a permanent four-foot "welcome" sign at the entrance to the school bearing Home Depot's corporate logo. A representative from Home Depot, present at parent-teacher night, informed parents the megastore was opening soon nearby.

On "playground build day," the columnist reported:

> [P]arent volunteers were given Home Depot shirts and hats to wear, and my son's class was sent out during class time to watch the construction and put on temporary Home Depot tattoos. Later at the ribbon-cutting ceremony, the children sang the 'Home Depot song.'[1238]

According to the column in the *National Post,* Home Depot was able to buy access to a captive audience of five- to twelve-year olds, and its goal in building the playground was "to build future brand loyalty among the youngest and most naïve members of our society."[1239] The article goes on to point out that this is not an isolated phenomenon. In a book entitled *BRANDchild,* Martin Lindstrom teaches firms how to market their products to children, who he says, have a say in 80% of their parents' purchases. According to the writer:

> It is important to stress that cause-related marketing is not a charitable donation. It is a strategically planned marketing effort designed to increase a company's sales or improve its position in the marketplace through actions that also benefit a charity.[1240]

These few illustrative examples indicate some of the potential consequences of increased reliance on corporate partnerships and sponsorships in elementary and secondary education.

The Canadian Teachers' Federation 2006 survey of elementary and secondary schools across the country found that partnerships and sponsorships were particularly prevalent at

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[1237] Dobbin, Murray. "Warning: The P3s Are Coming!" *Winnipeg Free Press*, 2002 accessed Sept 25, 2005; available from http://www.creativeresistance.ca/awareness/2002-july2021-Warning-the-P2003's-are-coming-murray-dobbin.htm.

[1238] Coffin. "This Isn't Charity."

[1239] Ibid.

[1240] Ibid.

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the secondary school level, where 56% of schools were involved in this kind of relationship with a corporation or business. At the elementary school level, 19% of schools had partnerships/ sponsorships with a corporation.[1241]

The CTF survey also examined the prevalence of incentive programs in schools, whereby students and parents are encouraged to purchase or use a specific company's products or services in exchange for money, school materials or equipment. For example, a proportion of the value of store receipts, product labels or coupons can be awarded to the school. The survey found that 36% of elementary schools and 10% of secondary schools were involved in incentive programs in 2003/2004.[1242]

The CTF 2006 survey also found that:[1243]

- Nationally, 18% of all schools reported some type of partnership or sponsorship arrangement with a corporation or business to provide any of the following: tutoring services, academic courses, athletic programs, extracurricular activities, technology courses, staff, or other. 15% of elementary schools and 30% of secondary schools reported such a partnership or sponsorship arrangement.
- Nationally, 30% of all schools reported having incentive programs to encourage students, teachers, or parents to purchase or use a specific company's products or services in exchange for cash, school materials or equipment. 35% of elementary schools and 9% of secondary schools were involved in these programs.
- The "Campbell's Labels for Education" [1244] incentive program was by far the most popular. Other programs of this sort were sponsored by Sobeys, Zehrs, and Staples.
- 64% of elementary schools reported having Scholastic educational materials (the world's largest corporate publisher and distributor of educational materials).

12.1.2 Corporate-sponsored teaching materials

The provision of classroom teaching materials by corporations has become more commonplace in recent years. These public relations materials are often designed to look

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[1241] Canadian Teachers' Federation. *Commercialism in Canadian Schools - a National Survey. Summary of Findings*. Also Canadian Teachers' Federation. *Commercialism in Canadian Schools: Who's Calling the Shots?*, Ottawa, Canadian Teachers' Federation, Canadian Centre for Policy Alternatives and the Federation des syndicats de l'enseignement, 2006; accessed September 2006; available from http://www.policyalternatives.ca/.

[1242] Canadian Teachers' Federation. *Commercialism in Canadian Schools: Who's Calling the Shots?*, accessed.

[1243] Canadian Teachers' Federation. *Commercialism in Canadian Schools - a National Survey. Summary of Findings*.

[1244] For a promotion of this program see http://www.labelsforeducation.com/default.aspx. accessed July 2006.

like lesson plans and class activities.[1245] As noted above, the partnership between elementary schools in Nova Scotia and McDonald's is a case in point. Not only did McDonald's provide sports equipment in exchange for access to young children in a school setting, it provided participating teachers with a "toolkit" of teaching materials to use in their classrooms. In essence, McDonald's provided information to be used to fulfill curriculum requirements around subjects such as health, nutrition, and personal fitness.

There are numerous other cases where corporations sponsor educational materials. Two examples are given here for illustrative purposes:

- In 2004 the Boys and Girls Club of America, the Coca-Cola Company, and Kraft Foods (owned by tobacco giant Philip Morris) launched a $12 million "youth health and wellness initiative." In the Press Release, the companies announce that in light of the "epidemic of obesity" among youth in the U.S., the goal of the initiative was to "empower young people to make informed decisions about their physical, mental and social well-being."[1246] To this end the Boys and Girls Club formed an advisory council, which was to provide input on school curricula in the U.S., Puerto Rico, and the Virgin Islands. According to Betsy Holden, president of Global Marketing and Category Development for Kraft Foods, the program will be monitored in order to "learn what motivates and excites young people."[1247]

- In 1994, J.D. Irving Limited, and the New Brunswick Department of Education formed a "Partnership for Education," to educate the province's teachers and students about the "region's forest resource." Students and teachers toured Irving's forestry operations and, according to the company, became "committed to the idea of developing resources that would offer fun, credible, interactive and cross-curricular lessons of the contemporary forest, related industries, forest management practices and current issues."[1248] Three teachers were seconded full time through the Department of Education to work with J.D. Irving, Ltd. as education consultants to "develop and introduce resource materials through teacher workshops. The teachers assisted in coordinating class and teacher tours of forestry operations as well as forestry spokespersons for classroom discussions."[1249]

[1245] Centre for Commercial Free Public Education. *What Is Commercialism in Schools?*, Centre for Commercial Free Public Education, 2005; accessed October 17 2005; available from http://www.ibiblio.org/commercialfree/commercialismtext.html - problem.

[1246] Kraft Foods Inc. *Press Release: Boys and Girls Clubs of America, the Coca-Cola Company and Kraft Foods Launch $12 Million Youth Health and Wellness Initiative*, Kraft Foods Inc., 2004; accessed January 4 2005; available from http://www.kraft.com/newsroom/0482004.html.

[1247] Ibid., accessed.

[1248] Irving Forest Discovery Network. *Forest Discovery Box*, J.D. Irving Ltd., accessed January 2005; available from http://www.ifdn.com/discbox/discbox1.htm.

[1249] Ibid., accessed.

The provision of corporate-sponsored "information" and educational materials in the classroom raises important questions about the difference between information and propaganda, and about the veracity and comprehensiveness of the information itself.[1250] In a seminal article, Henry Giroux argues that teaching and learning are "profoundly political practices," and that some of the questions that must be addressed in the classroom include: "Who produces classroom knowledge and for whom? Who determines what knowledge is included or excluded? What is the agenda that informs the production and teaching of knowledge?"[1251] Giroux suggests that if the role of education, and higher education in particular, is to create "critical citizens and democratic agents," then the commercialization of education is cause for concern:

> Ardent consumers and disengaged citizens provide fodder for a growing cynicism and depoliticisation of public life at a time when there is an increasing awareness not just of corporate corruption, financial mismanagement, and systemic greed but also of the recognition that a democracy of critical citizens is being replaced quickly by an ersatz democracy of consumers.[1252]

Further, says Giroux, the new "symbiosis" between public educational institutions and the corporate sector results in the "unmistakable radical reduction of [public education's] public and critical role."[1253]

The California-based Centre for Commercial-Free Public Education notes that when corporate sponsored teaching materials were analyzed, 80% contained biased or incomplete information, "and promoted a viewpoint that favoured consumption of the sponsor's product or service or otherwise favoured the company and its economic agenda. Over half the materials studied were found to be commercial or highly commercial."[1254]

A report published by the U.S. Consumers Union in 1995 found that "thousands of corporations were targeting school children or their teachers with marketing activities ranging from teaching videos, to guidebooks, and posters to contests, product giveaways, and coupons."[1255]

Part and parcel of the recent trend towards greater commercialization of the public school system is the move toward a managerial approach to education. In a speech given to the CTF in 2001 entitled *In Defence of Public Education,* John Ralston Saul argued that

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[1250] Propaganda is defined as an organized program of publicity, selected information, etc., used to propagate a doctrine or practice.

[1251] Giroux. "Youth, Higher Education, and the Crisis of Public Time: Educated Hope and the Possibility of a Democratic Future." p. 162.

[1252] Ibid. p. 145.

[1253] Ibid. p. 147. Giroux's research focuses mainly on higher education; however, much of it is also relevant to the public school system.

[1254] Centre for Commercial Free Public Education. *What Is Commercialism in Schools?*, accessed.

[1255] Klein. *No Logo: Taking Aim at the Brand Bullies*.

managerial solutions to complex problems are "rooted in industrial theories of the late 19th century" and "are based on economies of scale."[1256] One of the results of this kind of thinking, according to Saul, is a move towards larger class sizes. Saul points out that most class size statistics are "gerrymandered" in that the calculation for student-teacher ratio often includes teachers and / or administrators who never enter the classroom (principals, vice-principals, counsellors, and so on). "Official statistics talk of 25 or 30 students per class, when parents—this is citizens—know that their children are in classes of thirty-five."[1257]

According to the 2003 report of the Pan-Canadian Indicators Program (PCEIP), the average pupil-educator ratio in public schools in Canada rose from 16 students per educator at the beginning of the 1990s to 17 in 1996–1997. In 1999–2000, it was 16.3.[1258] However, average pupil-educator ratio is not synonymous with average class size. Average class size is greater than the pupil-educator ratio because the latter includes all educators, as Saul points out above, not just classroom teachers. In Saskatchewan, for instance, student-educator ratio and average class size are both reported by the Ministry of Education. In 2001–2002, the average student-educator ratio was 15.9 while the average class size for the same year was 21.[1259]

12.1.3 School fundraising and household expenditures on education

Cuts in public spending on education have resulted not only in increased corporate activity in schools, but also in increased reliance on fundraising (particularly from parents) and user fees.

A British Columbia parents' report released in 2005 itemized where money from fundraising for public schools was being spent, and found that most often it went toward computers and software. The British Columbia group, the Society for Public Education, surveyed 17 out of 18 schools in Vancouver and found that in total the schools had raised $680,000 the previous year for computers, physical education equipment and shop equipment. Additional money that was fundraised went to pay for musical instruments, fine-art supplies, office equipment, and substitute teachers.

[1256] Saul, John Ralston. *In Defence of Public Education*, Speech given to the Canadian Teachers' Federation, Whitehorse, Yukon, 2001; accessed October 13 2005; available from http://www.gg.ca/media/doc.asp?lang=e&DocID=1366.
[1257] Ibid., accessed.
[1258] Council of Ministers of Education Canada (CMEC). *Education Indicators in Canada. Report of the Pan-Canadian Education Indicators Program, 2003*, accessed. p. 65.
[1259] Saskatchewan Learning. *Saskatchewan Education Indicators Kindergarten to Grade 12*, Ministry of Education, 2002; accessed March 10 2005; available from http://www.learning.gov.sk.ca/admin/pub_press.shtml.

According to Bill Bargeman, president of the Vancouver Secondary Teachers' Association, the parents' report points to the "inherent inequities" associated with fundraising for public schools. Bargeman noted that a recent call for contributions from parents in two different communities yielded very different results. In three weeks, the school in one affluent neighbourhood raised $13,000, while the school in the poorer neighbourhood raised only $700.[1260]

According to the Canadian Union of Public Employees (CUPE), user fees threaten access to public education. "Many elementary students are now expected to bring their own supplies, including pencils, paper, glue, markers, crayons, rulers and dictionaries—a new and unwieldy burden, particularly for families on fixed incomes."[1261] According to the Toronto Parent Network (TPN), the most salient point about fundraising and the charging of user fees is that it "will fluctuate from year to year and from neighbourhood to neighbourhood."[1262]

In 1997, TPN joined forces with People for Education to begin tracking trends in public education in response to the implementation in 1996 of Bill 34, which included funding cuts to Ontario's education system. Initially the two groups only surveyed elementary schools in Ontario, but recently secondary schools have been included as well.[1263] Looking at data from 1997/1998 to 2000/2001, they found that the amount of money fundraised in elementary schools increased from $170,000 in 1997/1998 to nearly $660,000 in 2000/2001—an increase of 288%. The groups reported that if this figure were extrapolated to include all elementary schools in the province, including those that did not respond to the survey, the figure would be closer to $5 million fundraised in 2001/2002.[1264]

According to survey results, there was a shift in the areas where fundraised dollars were being spent. Fewer parents' councils reported spending on textbooks (from 32.4% to 9.6% of parents' councils), computers (from 82.1% to 38.6% of parents' councils) and classroom expenses (from 44.8% to 37.4%). However, fundraising effort for library books increased: in 2001/2002, 44.6% of parents' councils reported fundraising for library books, up from 16.7% of parents' councils in 1997/1998. There was also an increase in money spent on "other," which included field trips, enrichment, instruments, visiting artists, teacher allowances, special resource materials, and physical education

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[1260] Fong, Petti. "Parents' Report Itemizes Educational Fundraising." *Globe and Mail*, Toronto, September 21, 2005 S1. p. S1.
[1261] Canadian Union of Public Employees (CUPE). *Like Candy from a Baby*, CUPE, 2005; accessed September 12 2005; available from http://www.cupe.ca/arp/05/3.asp.
[1262] Toronto Parent Network. *Tracking Publicly Funded Education: The Fifth Report, Toronto Highlights*, accessed.
[1263] People for Education. *Tracking Publicly Funded Education. Secondary School Survey*, People for Education, 2001; accessed September 26 2005; available from http://wwwpeopleforeducation.com.
[1264] Toronto Parent Network. *Tracking Publicly Funded Education: The Fifth Report, Toronto Highlights*, accessed.

equipment. According to the TPN: "This means that some students will have the resources that enhance learning and others will not."[1265]

The survey results also indicated that between 1997/1998 and 2001/2002 more schools reported textbooks being shared, up from 43% of schools to 55% of schools, and that 60% of schools were reporting the use of worn out or out of date textbooks, down from 76% in 1997/1998. The report observes:

> [T]he high number of schools that have students sharing textbooks may indicate there is not enough money to purchase complete sets of new textbooks that are required for new curriculum. Students are restricted in their use of them and this has serious implications for study and homework routines.[1266]

The 2006 survey of Canadian schools conducted by the Canadian Teachers' Federation (CTF) found that fundraising was a common activity in public schools, and that 75% of schools fundraised for school trips. The survey also found that elementary schools were more likely to fundraise for library books, while secondary schools were more likely to raise money for athletic programs and clubs.[1267]

According to the CTF, school-based fundraising initiatives make it easier for provincial and territorial governments to "avoid their responsibilities to adequately fund public schools."[1268] This could result in a public system that is not "provided free."[1269]

> While affluent communities are able to raise thousands of dollars relatively quickly through direct appeal campaigns, schools in socio-economically disadvantaged communities are not as fortunate. There is a significant risk that these activities are contributing to a two-tiered education system—affluent versus less affluent communities, urban versus rural regions. [1270]

In a speech to the Canadian Teachers' Federation entitled "In Defence of Public Education," John Ralston Saul argued: "The whole idea of private fundraising for public schools is the first step towards introducing a class-based society into Canada. Private fundraising is, in and of itself, a form of exclusion."[1271]

[1265] Ibid., accessed.

[1266] Ibid., accessed.

[1267] Canadian Teachers' Federation. *Commercialism in Canadian Schools - a National Survey. Summary of Findings*.

[1268] Canadian Teachers' Federation. *News Release: National Survey Reveals Trend of Commercialism and Fundraising Schemes in Canadian Schools*, Ottawa: Canadian Teachers' Federation, July 15, 2005.

[1269] Council of Ministers of Education Canada (CMEC). *Education in Canada*, accessed.

[1270] Canadian Teachers' Federation. *News Release: National Survey Reveals Trend of Commercialism and Fundraising Schemes in Canadian Schools*.

[1271] Saul. *In Defence of Public Education*, accessed.

In addition to fundraising schemes, Canadian schools are also increasingly charging user fees for various services and activities that were at one time provided for free. The 2005 CTF survey revealed that:

- 15% of elementary schools and 21% of secondary schools reported that their school sold services, such as renting space or selling curriculum materials, to generate income.
- A number of schools reported international student tuition fees as a source of income.
- The most common things for which schools charged user fees were school trips, supplies, programs, and sports teams.
- 67% of Canadian elementary and secondary schools charge user fees for school trips.
- 60% of elementary schools and 49% of secondary schools fundraise for library books.
- 68% of secondary schools fundraise for athletic programs.
- Nationally, the mean amount of money raised by all schools through fundraising and other activities including user fees, advertising revenue and partnerships / sponsorships is $15,700, with English schools raising larger sums ($16,300) than French schools ($13,300).

The national CTF survey results are also in keeping with the findings of the Toronto Parent Network (TPN) surveys. According to the TPN highlight report, in 1997/1998, 67% of elementary schools in Ontario reported that the community was able to make use of the school facilities free of charge. However, in 2000/2001, only 9% of Ontario elementary schools reported community access free of charge. The report pointed out that most areas in the city of Toronto, in particular, do not have the real estate or the money to build new community centres. "Schools often function in that capacity and are the hub of the neighbourhood they serve. This makes social and economic sense. It does not make sense to under fund and undermine this community resource."[1272]

Data from Statistics Canada's surveys on household spending support these findings. In fact, on a household level, the amount of money being spent on education—from primary to post-secondary education—is sharply on the rise. Statistics Canada found that the average expenditure on education, per household reporting an expenditure, increased from $1,013 in 1984 ($2003) to $2,265 in 2003—a real increase of 123%.[1273] [1274]

[1272] Toronto Parent Network. *Tracking Publicly Funded Education: The Fifth Report, Toronto Highlights*, accessed.

[1273] Statistics Canada. *Family Expenditures in Canada, Selected Cities, 1984*, Catalogue no. 62-555, Ottawa: Statistics Canada, 1986. In 1984, 44.6% of households reported having an expenditure on education. In 2003, 44.5% reported an expenditure.

[1274] Statistics Canada. *Spending Patterns in Canada*, Catalogue no. 62-202-XPE, Ottawa: Statistics Canada, 2004.

Statistics Canada data also indicate that between 1969 and 1996 the percentage of total household expenditure dedicated to education has risen from 0.9% in 1969 to 1.1% in 1996.[1275] In short, education is becoming more expensive to households both in absolute terms and as a proportion of all household spending, indicating the potential for a widening gap in access to educational resources in Canada based on capacity to pay.

12.1.4 Private schooling

According to Statistics Canada, in 1998–1999, 5.6% of all children in elementary and secondary schools in Canada were enrolled in private schools, up from 4.6% in 1987–1988.[1276] The proportions were highest in Quebec, at 9.2%, and British Columbia, at 8.8%, and lowest in the Atlantic Provinces and Saskatchewan. Only 0.4% of all children in Newfoundland, 0.6% in New Brunswick, 1.0% in Prince Edward Island, 1.6% in Nova Scotia and 1.3% in Saskatchewan were enrolled in private schools.[1277]

It is not clear to what extent private school tuitions contribute to the increased household spending on education noted above. However, this important issue will be explored further below, as the growing proportion of Canadian children enrolled in private schools may also reveal a potential for a widening gap in access to quality education as the public school system continues to face increased competition for scarce financial resources since the 1990s. While considerable public attention has focused on trends towards a "two-tier" private-public health care system in Canada based on capacity to pay, less attention is directed to trends towards a two-tier private-public education system in Canada also based on capacity to pay.

However, the trend toward private education in Canada is beginning to raise growing concerns on a number of fronts and from a number of leading commentators. In a speech to the CTF, John Ralston Saul emphasized that:

> Our success as a country is built upon [the public education] system. It is only with great difficulty that I could imagine a greater betrayal of the principle of Canadian democracy than the piecemeal reduction of public education to private education.[1278]

[1275] Statistics Canada. *Family Expenditure in Canada, 1996*, Catalogue no. 62-555-XPB, Ottawa: Statistics Canada, 1998. Based on current dollars.

[1276] Statistics Canada. "Trends in the Use of Private Education, 1987/88 to 1998/99." *The Daily*, July 4, 2001, accessed December 2004; available from http://www.statcan.ca/Daily/English/010704/d010704b.htm.

[1277] Within the private school system there is a grouping of schools called independent schools. Both private and independent schools are fee-paying, but independent schools are often run as non-profit organizations where monies are reinvested in the school, and a board of trustees oversees the organization. Private schools, on the other hand, operate as for-profit companies.

[1278] Saul. *In Defence of Public Education*, accessed.

To what extent does private education undermine the goals of the public system, as envisioned by Saul, and, in Saul's words, contribute to a "class-based society?"

According to Statistics Canada data, 26% of the children who attend private schools are from families with incomes exceeding $100,000, and 29% of the children are from families with incomes below $50,000. By contrast, about 43% of children in the public system had families earning less than $50,000, and only 12% had family incomes over $100,000.N not surprisingly, higher income earners are overrepresented in the private system.

According to a recent article in the *Globe and Mail,* parents are turning to private schools because the public system is not offering what it used to offer. In many cases, extra-curricular activities, music, art, and sports, have suffered from the budget cuts of the 1990s. In addition, the article notes, private schools tend to offer smaller class sizes, greater accountability, and a more diverse program that "develops the whole person." For example, the article cites a private school in Alberta, where older children are able to participate in an outdoor education program, which includes backpacking, river canoeing, rock climbing, and cycling expeditions.[1279]

12.1.5 Home schooling

Home schooling, as an alternative to public school attendance, has also grown in popularity in North America—to some extent also in response to perceptions of deficits in the quality of the public education system. According to Statistics Canada, home schooling occurs when a child "participates in his or her education at home rather than attending a public, private or other type of school." In essence, the parents replace the teachers.[1280] In Canada, parents are not required to have teaching qualifications to home school their children, and each province has its own requirements for home schooling.

According to Statistics Canada, since 1979, the home schooling movement has been gaining momentum. In 1979, 2,000 Canadian children were being home schooled. By 1996, the figure was closer to 17,500, or 0.4% of total student enrolment—a 776% increase over 18 years. Home schooling associations claim much higher numbers. In 2001 they reported that more than 80,000 Canadian children were being home schooled.[1281]

[1279] Batcho-Lino, Stefanie. "Report on Private Schools: Working Hard, Playing Hard." *Globe and Mail*, Toronto, October 18, 2005 P-1, P. p. P-1.

[1280] Luffman, Jacqueline. "When Parents Replace Teachers: The Home Schooling Option." *Canadian Social Trends*, Statistics Canada, Catalogue no. 11-008-XPE, Autumn, 1998.

[1281] Basham, Patrick. *Home Schooling: From the Extreme to the Mainstream*, The Fraser Institute, 2001. This does not include Quebec home schoolers because the Ministry of Quebec does not collect data on home schooling.

Canadian studies on home schooling are scant and therefore most of the data currently available on the subject are from the U.S. According to one study, in 1993–1994, parents in the U.S. who home schooled their children spent an average of only U.S.$546 per child. This is particularly compelling since home schooled children tend to do very well in terms of both academic and socialization outcomes.[1282]

These data have been used by the Fraser Institute, a right of centre think tank, to support its argument that the public education system is poorly run and inefficient. When compared to the public system, which spends roughly $8,000 on average per student in Canada, home schooling does appear to be incredibly inexpensive. However, the public expenditure per student includes both the capital and full operating expenditures of the school boards, including teacher salaries, while the home schooling cost figure only includes teaching materials and does not take into account the fact that the parent who does the home schooling often does not work outside the home for pay. Therefore the actual cost of home schooling is actually much higher, especially if the opportunity cost of the home schooling parent's foregone income is taken into account.

Due to time constraints it was not possible at this stage to obtain more detailed data on home schooling in Canada. Because of the very significant trends in this sphere, further data and analysis on home schooling should be included in updates of this report.

12.2 Consumption patterns in society—branding in the schoolhouse

> [U]nder existing conditions, private capitalists inevitably control, directly or indirectly, the main sources of information (press, radio, education). It is thus extremely difficult, and indeed in most cases impossible, for the individual citizen to come to objective conclusions and to make intelligent use of his political rights.
> Albert Einstein[1283]

> A consumer society is one in which ever-increasing consumption by the entire society is a primary goal, and individual consumption is understood as linked to personal happiness and status […]. Those who consume the most are often the most highly educated because of the correlation between income and educational level […]. As a sustainable future requires reducing some consumption levels, both the content and the process of education must be congruent with that goal.
> Joseph Kruth[1284]

[1282] Ibid.
[1283] Einstein. "Why Socialism?"

According to the Centre for Commercial-Free Public Education, corporations are interested in marketing to students and in taking advantage of new settings like schools, which have the potential to create and establish consumption patterns and consumer brand loyalty at an early age, so that these patterns will be carried forward into adulthood. "Profit, not education, is their priority," concludes the Centre.[1285]

What are these firms marketing? Naomi Klein, author of *No Logo: Taking Aim at the Brand Bullies*, believes the companies are marketing their brand. A "brand," according to Klein, is the "core meaning of the modern corporation," and advertising is "one vehicle used to convey that meaning to the world."[1286]

Klein summarizes what took place in the corporate world in the mid-1980s:

> A consensus emerged that corporations were bloated, oversized; they owned too much, employed too many people, and were weighted down with *too many things*. The very process of producing—running one's own factories, being responsible for tens of thousands of full-time, permanent employees—began to look less like the route to success and more like a clunky liability. At around this same time a new kind of corporation began to rival the traditional all-American manufacturers for market share; these were the Nikes and Microsofts, and later, the Tommy Hilfigers and Intels. These pioneers made the bold claim that producing goods was only an incidental part of their operations […]. What these companies produced primarily were not things, they said, but *images* of their brands. Their real work lay not in manufacturing but in marketing. This formula, needless to say, has proved enormously profitable, and its success has companies competing in a race toward weightlessness: whoever owns the least, has the fewest employees on the payroll and produces the most powerful images, as opposed to products, wins the race.[1287]

Klein argues that the mergers of recent years are "deceptive phenomena," and that while it looks as if the corporate giants are getting bigger by joining forces, they are actually "shrinking." Klein writes: "Their apparent bigness is simply the most effective route toward their real goal: divestment of the world of things."[1288]

[1284] Kruth, Joseph. "Education and the Consumer Society," in *Encycopedia of Human Resources Policy and Management: Education for Sustainable Development in Encyclopedia of Life Support Systems (EOLSS)*. Oxford, U.K.: Developed under the Auspices of the UNESCO, EOLSS Publishers, 2004, accessed June 2005; available from http://www.eolss.net/eolss_samplechapters_C11.aspx.

[1285] Centre for Commercial Free Public Education. *What Is Commercialism in Schools?*, accessed.

[1286] Klein. *No Logo: Taking Aim at the Brand Bullies*. pp. 4–5.

[1287] Ibid.

[1288] Ibid.

A brand is successful if it commands a certain loyalty. In other words, in this new era of marketing, a corporation wants its brand image to be more appealing and evocative than some other brand so that consumers will buy its product over some other product.

The move by corporations into the world of images, as opposed to things, has also been accompanied by a move into previously uncharted territory—the world of children and youth. According to a recent book on the subject by Susan Linn, children and youth have become the new market—and a wellspring of new revenue. According to Linn, the schoolhouse, where children spend the majority of their weekdays, has been colonized. Linn argues that "children are bombarded from morning to night by messages designed not to make their lives better but for the sole purpose of selling something."[1289]

> On average, children between the ages of two and 18 spend almost 40 hours a week outside of school consuming media, most of which is commercially driven. Nor is marketing limited to the time children spend outside school […] marketing in schools is a growth industry.[1290]

The idea of branding has been taken even further by the global marketing company, Saatchi and Saatchi, which has developed something called *Lovemarks*—brands that "inspire loyalty beyond reason":[1291] "People love them because of what they are, not because of what they do. Their appeal is emotional."[1292]

Like most marketing firms, Saatchi and Saatchi have psychologists and anthropologists on staff, to help gauge the pulse of children and youth. According to the Media Awareness Network, it is the "marriage" between psychologists and marketers that has made advertising to children such a lucrative proposition.

> With the help of well-paid researchers and psychologists, advertisers now have access to in-depth knowledge about children's developmental, emotional and social needs at different ages. Using research that analyzes children's behaviour, fantasy lives, art work, even their dreams, companies are able to craft sophisticated marketing strategies to reach young people.[1293]

[1289] Linn, Susan. "The Commercialization of Childhood," in *Childhood Lost. How American Culture Is Failing Our Kids*, ed. Olfman, Sharna. Westport: Praeger Press, 2005.
[1290] Ibid.
[1291] Roberts, Kevin. *Lovemarks*, Saatchi and Saatchi, 2005; accessed October 17 2005; available from http://www.saatchi.com/worldwide/kevin_roberts.asp.
[1292] Ibid., accessed.
[1293] Media Awareness Network. *Marketing and Consumerism: How Marketers Target Kids*, Media Awareness Network, 2004; accessed January 4 2005; available from http://www.media-awareness.ca/english/parents/marketing/marketers_target_kids.cfm.

Linn notes that these researchers also help companies develop markets, such as the new "tween" market, between ages eight and 12. In essence, marketers have discovered there is money to be made by treating tweens like teens.[1294]

According to the Media Awareness Network, this move to market to pre-adolescents as if they were teenagers is very problematic.

> By treating pre-adolescents as independent, mature consumers, marketers have been very successful in removing the gatekeepers (parents) from the picture, leaving tweens vulnerable to potentially unhealthy messages about body image, sexuality, relationships and violence.[1295]

It is interesting to note that a 1998 Health Canada survey on the health of Canadian youth found that by grade ten, over 75% of the girls and 50% of the boys surveyed were unhappy with their bodies.[1296]

According to Juliet Schor, author of *Born to Buy: The Commercialized Child and the New Consumer Culture,* marketing to tweens as if they were teens has made them older at younger ages. Schor notes that all the things that we once saw marketed to teens—make-up, music, fashion—are now marketed to pre-adolescents.[1297] According to the Media Awareness Network, total industry spending on advertising to children has jumped from $100 million in 1990 to more than $2 billion in 2000—a 20-fold increase in just ten years.[1298]

> Marketers plant the seeds of brand recognition in very young children, in the hopes that the seeds will grow into lifetime relationships […] babies as young as six months of age can form mental images of corporate logos and mascots. Brand loyalties can be established as early as age two, and by the time children head off to school most can recognize hundreds of brand logos.[1299]

Marketing to very young children raises additional concerns about their ability to differentiate between reality and advertising in marketing promotions. Thus children tend to be particularly vulnerable to misleading advertising. In addition, critics like Klein and Kruth argue that excessive advertising promotes a culture of consumerism and materialism. "This is a side-effect of brand expansion that is far more difficult to track

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[1294] Linn. "The Commercialization of Childhood."

[1295] Media Awareness Network. *Marketing and Consumerism: Special Issues for Teens and Tweens*, Media Awareness Network, 2004; accessed January 4 2005; available from http://www.media-awareness.ca/english/parents/marketing/issues_teens_marketing.cfm.

[1296] Health Canada study cited in Ibid., accessed.

[1297] Schor, Juliet cited in Aucoin, Don. "Marketing Cool. Targeting Kids with Ads Comes at a Cost." *The Boston Globe*, 2004 accessed January 2005; available from http://halifaxherald.com/stories/2004/2012/2023/fLiving2111.raw.html.

[1298] Media Awareness Network. *Marketing and Consumerism: How Marketers Target Kids*, accessed.

[1299] Ibid., accessed.

and quantify than the branding of culture and city spaces. This loss of space happens inside the individual; it is a colonization not of physical space but of mental space."[1300]

Getting access to schools also provides corporations with the opportunity to do detailed market research, which they can in turn use to advertise to school children. "Weekly focus groups, taste-tests, brand-preference questionnaires, opinion polls […] all are currently being used inside the classroom," notes Klein.[1301]

Universities have also become new marketing frontiers. University-industry "partnerships" have become ubiquitous features of campuses across the continent. Their more obvious incarnations have come in the form of on-campus advertising on sports uniforms or in bathroom stalls, and at campus "fairs" that provide firms with advertising and marketing opportunities. In addition, as noted earlier, choices of food and beverages are typically limited to the fast-food chain, soft drink company, or corporation with which the university has signed an exclusive and often undisclosed contract.

As previously mentioned, at the public school level, the hidden and perhaps more sinister partnerships have to do with corporations providing lesson plans and classroom teaching materials. At the university level, the more hidden partnerships have to do with knowledge production and research, as discussed in the section above.

[1300] Klein. *No Logo: Taking Aim at the Brand Bullies*. p. 66.
[1301] Ibid.

13. Corporate Influences on Formal Education: Higher Education

Real democracy cannot survive the serious subversion of information.

David Suzuki and Holly Dressel[1302]

Universities have a purpose. They are supposed to be pressing the boundaries of knowledge and inspiring student questioning; they are basically supposed to be subversive. That is their role in a healthy society.

Noam Chomsky[1303]

More than ever, higher education is expected to cater directly, quickly, and continually to the demands of the marketplace […]. University research that contributes to prescribed commercial purposes earns greater support and recognition than the curiosity-based inquiry that is so central to scholarly independence and the discovery of new knowledge.

P. Axelrod[1304]

If society's education system is ineluctably determined by economic requirements, and these economic requirements are the requirements of established market-capitalism, then it follows that we face the prospect of an inevitable transformation of our educational process into an organ of the capitalist market […]. Because an educational process is required by its nature to reflect upon and question presupposed patterns of being, its absorption into one of these patterns, the global market system, must leave society in a very real sense without its capacity to think. It becomes a kind of mass creature, a collective system of gratifying desires for private profit and consumption with no movement beyond itself towards understanding and consciousness as a human purpose in its own right.

John McMurtry[1305]

[1302] Suzuki, David, and Holly Dressel. *Good News for a Change. Hope for a Troubled Planet*, Toronto: Stoddart, 2002. p. 340.

[1303] Chomsky, Noam cited in Meylan, Greg. *Corporates a Threat to Academic Freedom - Chomsky*, 1998; accessed September 15 2005; available from http://archives.econ.utah.edu/archives/pen-I/1998m11/msg00396.htm.

[1304] Axelrod, P. *Values in Conflict: The University, the Marketplace, and the Trials of Liberal Education*, Montreal and Kingston: McGill-Queens's University Press, 2002. p. 12.

[1305] McMurtry, John. "Education and the Market Model," *Journal of Philosophy of Education*, vol. 25, no. 2, 1991: 209-217. p. 214.

And here we are, one of the richest civilizations per capita seen in the history of the world, living 50 to 80 percent longer than we've ever lived before, and what is the dominant line? We don't have time for broad education. We don't have time for ethics or history or civics. We've got to get trained fast in order to get a job fast […]. Public education is about citizenship. It is secondarily and tertiarily about getting trained and getting a job. Education is about democracy. Democracy is about education.

<div align="right">John Ralston Saul[1306]</div>

13.1 The role of the university

Intellectual freedom and academic independence, cornerstones of the present-day university, were won after a struggle that spanned more than a thousand years. According to John Ralston Saul, for most of their history, universities have always been places that those with power sought to control.

> Initially the churches assumed this task, so one of the central goals of the Enlightenment was to release universities from religious control. The new democratic elites of the nineteenth century declared the universities to be the custodians of intellectual freedom. In reality this young political order financed the institutions just as the old one had and sought to impose its 'standards.'
>
> Despite being edged with hypocrisy, the idea of academic independence was an important pillar of the new democratic nation state. Higher education gradually came to offer the basic training required by anyone who hoped to occupy a position with any power at all. In short, a university degree became a proof of membership in the ruling elite. With the decline of the influence of religion to an ever-narrowing area—often no more than the places of worship—the whole domain of public training in ethics and morality was left unaccounted for. Much of that role was gradually conferred upon the universities, where it was taken over by independent thinkers and teachers. A university education became the true finishing school of the responsible citizen in a democracy.[1307]

In a seminal paper analyzing the conflict and contradiction between the "defining principles" of education in general and the market, John McMurtry argues that:

> Education has always been subject to external pressures that seek to subordinate its practice and goals to vested interests of some kind, whether of slave-holding oligarchies, theocratic states, political parties or merely prevailing dogmas of

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[1306] Saul. *Struggling for Balance: Public Education and Civil Society*, accessed.
[1307] Saul, John Ralston. *The Doubter's Companion. The Dictionary of Aggressive Common Sense*, Toronto: Viking, 1994.

collective belief. [… The] long-term development of education and of civilization itself requires the autonomy of education from market command.[1308]

According to Giroux the historic functions of the university in Canada and elsewhere as a resource for civic life and a source of research for the public good are currently being challenged, with calls on numerous fronts to reinvent the system to conform to the needs of private interests. Critics of this recent shift from public to private interest argue that the historic and ideal role of the university is being threatened, and as a result, democracy itself is also at risk.

> Struggling for democracy is both a political and educational task. Fundamental to the rise of vibrant democratic culture is the recognition that education must be treated as a public good—a crucial site where students gain a public voice and come to grips with their own power as individual and social agents. Public and higher education cannot be viewed merely as sites for commercial investment or for affirming a notion of the private good based exclusively on the fulfillment of individual needs. Reducing higher education to the handmaiden of corporate culture works against the critical social imperative of educating citizens who can sustain and develop inclusive democratic public spheres. There is a long tradition extending from Horace Mann to C. Wright Mills that extols the importance of education as essential for a democratic public life. This legacy of discourse appears to have faded as the American university reinvents itself by giving way to the demands of the marketplace.[1309]

Saul points out that since the Second World War there has been a marked shift in the role of professors from academics to consultants for governments and corporations. "The ideal of academic freedom and independence has now been severely damaged. To undo the corrupt system in place may be as complex as the eighteenth- and nineteenth-century battle to separate church and learning."[1310]

Giroux and other educators argue that this shift from an "autonomous sphere for the development of a critical and productive democratic citizenry" to what is now being measured in narrow commercial terms does not bode well for the future of higher education. Rather than being viewed as a place where citizens are educated, universities are more and more viewed as places where skilled workers are trained, and where commercial interests shape the institution's "purpose and mission."[1311]

[1308] McMurtry. "Education and the Market Model." p. 209.
[1309] Giroux, Henry A. "Selling out Higher Education," *Policy Futures in Education*, vol. 1, no. 1, 2003: 179-199.
[1310] Saul. *The Doubter's Companion. The Dictionary of Aggressive Common Sense*.
[1311] Giroux. "Selling out Higher Education."

Ideally, according to James Beaton, curiosity-based research leads to the creation of new knowledge, which is then "freely distributed to the public for social consumption and benefit."[1312, 1313]

> The university as an organization is not structured in the same way as a private sector company. Knowledge development is a complex and often tedious process that operates under different timelines than the private sector. The private sector would rarely embark upon research and development if they knew in advance that there would be no profit potential. In the university, most research is conducted without the requirement of knowing that a commercial enterprise may result.[1314]

Critics have also pointed to the use of performance indicators as a further indication of the corporatization of the university. A report by the Canadian Federation for the Humanities and Social Sciences says that performance indicators, such as employability of graduates and revenue generated by research, introduce the "corporate ideal" into the university—a "set of principles that define and operate the university as a private corporation rather than a public institution."[1315] It argues that performance indicators currently used by universities and various conventional indicator programs in Canada are drawn from business systems such as Total Quality Management (TQM) and Quality Assurance (QA), and then used to manage university teaching and research.

> The goal of management is increasingly to exert as much control as possible over the direction of the research so that their university will be a favourable site of investment. As competing for capital becomes the goal of management, the public component of the university is increasingly marginalized.[1316]

The Canadian Federation for the Humanities and Social Sciences points out that corporate sponsored research and the reliance on private research funds in general do not mean the humanities and social sciences will be eliminated altogether. More likely to occur is "a strengthening of the applied components of the Social Sciences and Humanities with a gradual decrease in spaces available for students in non-applied courses and reduced funding for non-market research."[1317]

[1312] Beaton, James. *Performance Indicators and Quality Management in the University: A Critical Review*, Ottawa: Canadian Federation for the Humanities and Social Sciences, 1999.

[1313] In a review of this chapter, John McMurtry points out that the favourably reported Beaton quote refers to knowledge for "social consumption," which, he explains, "discloses the dominant conceptual framing at work even in critique. Knowledge is not consumed, it is transmitted and learned. The dominant conception of education as a consumer object lies at the conceptual ground of our current educational predicament. It confuses education with other corporate commodities that are ready-made, delivered for a price." McMurtry, Professor of Philosophy, University of Guelph, personal communication.

[1314] Beaton. *Performance Indicators and Quality Management in the University: A Critical Review*.

[1315] Ibid.

[1316] Ibid.

[1317] Ibid.

The problems and issues related to privately funded university research will be discussed in greater detail in the following sections.

The motivation behind rethinking the role of universities was articulated clearly in the 2000 report of the Advisory Council on Science and Technology:

> As Canada moves to a more knowledge-based society, the knowledge produced in our universities will play a more central role in addressing our social and economic agendas. The competitiveness of research in Canadian universities is dependent on three factors, the quality of the researchers, the funds available to support the costs of research projects and the quality of the research environment.[1318]

In other words, economic progress in the conventional sense depends on knowledge and the utilization of this knowledge. However, some argue that knowledge has always been tied to economic progress and expansion, that nothing new has happened at all, and that the "concept of a knowledge-based economy is simply a concept that serves to direct the attention of policy-makers to science and technology issues and to their role in the economy."[1319]

Godin defines "knowledge-based economy" in this way:

> It can be said that the term knowledge-based economy referred to at least two (supposed) characteristics of the new economy. Firstly, knowledge would be more quantitatively and qualitatively important than before. Secondly, applications of information and communication technologies (ICT) would be the drivers of the new economy.[1320]

Godin argues that the OECD originally promoted the concept of a knowledge economy and currently collects data for nearly sixty indicators aimed at measuring it. In fact, he points out that most, if not all, of the OECD indicators collected to measure this new economy "had already been measured for years or even decades, or are variations of old indicators that had suddenly become subsumed under the concept of the knowledge-based economy." Godin argues, therefore, that the term knowledge-based economy is a "label," a "rhetorical concept […] which helped re-launch discourses on science and technology," and which allowed for the collection of statistics for a number of previously existing indicators under one umbrella.[1321]

[1318] Advisory Council on Science and Technology. *Creating a Sustainable University Research Environment in Canada*, Ottawa, Advisory Council on Science and Technology, 2000; accessed September 16 2005; available from http://acst-ccst.gc.ca/r/sum_e.html.

[1319] Godin. *The Knowledge-Based Economy: Conceptual Framework or Buzzword?*, accessed. p. 4.

[1320] Ibid., accessed. p. 11.

[1321] Ibid., accessed. pp. 16–21.

Some thinkers in the field argue that it is not the relationship between knowledge and economics that has changed—indeed knowledge has always been central to the modern economy—but that it is the way we now think about knowledge that has changed. According to Peter and Humes:

> Knowledge is now recognized as being at least as important as capital (physical and financial) and natural resources as a source of economic growth. In short, knowledge is now regarded as a national economic asset and the basis of national competitive advantage. Accordingly, education at all levels, and especially higher education, with its potential to enhance productivity through research, is seen as the global panacea to economic policy.[1322]

Furthermore, as noted by Lev and Zambon, it is not enough any more to have a good product to sell:

> The constantly changing competitive conditions have induced a need to define new company strategies, which involve increasing investment in intangible assets. The reason is that products have to be differentiated and innovated and then embody increasing amounts of knowledge, so that the phases of the production process where intangible assets are particularly present (research, organization and marketing) become essential to managers and investors.[1323]

In short, research and knowledge are increasingly recognized as instrumental means of adding value to products, with control over those assets seen as conferring a competitive advantage in the market.

The trend toward globalization, and the movement towards world economic integration, also supports this shift to a knowledge economy since trade in knowledge and ideas are not constrained by international borders. This view is espoused by two of the largest world economic and policy institutions, namely, the World Bank and the OECD. Coupled with this view is the understanding that the shift to a knowledge economy requires "a new coalition between education and industry."[1324]

> Governments will need more stress on upgrading human capital through promoting access to a range of skills, and especially the capacity to learn; enhancing the knowledge distribution power of the economy through collaborative networks and the diffusion of technology; and providing the

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[1322] Peters, and Humes. "Education in the Knowledge Economy."

[1323] Lev, Baruch, and Stefano Zambon. "Intangibles and Intellectual Capital: An Introduction to a Special Issue," *European Accounting Review*, vol. 12, no. 4, 2003: 597-603.

[1324] Organisation for Economic Co-operation and Development (OECD). *The Knowledge-Based Economy*, accessed.

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enabling conditions for organizational change at the firm level to maximize the benefits of technology for productivity.[1325]

It appears that the OECD considers the function of education to service proprietary market functions. Productivity in these terms specifically means lowering the ratio of proprietary costs to profit revenues. In addition, governments are also embracing this perspective and have placed the knowledge economy and support for knowledge workers at the top of their agendas. According to Peters and Humes:

> National policies for encouraging knowledge generation, knowledge acquisition, knowledge diffusion, and the exploitation of knowledge have become the most pressing priorities in the science, research and education policy regimes [...]. Knowledge workers are now encouraged to continuously upgrade and broaden their skills, through formal education and lifelong learning, as well as through learning in the workplace and in less formal surroundings.[1326]

Furthermore, the more "knowledge-based" a society is, the "better its innovation capabilities," where innovation refers to "complex set of social and economic processes that produce knowledge and convert it into wealth and other forms of social value."[1327] Of course innovation is not new—all human societies have been involved in some form of innovation or other. However, the rate at which innovation occurs today has never existed before, and its impact on economic change has never been greater. According to a study prepared for Industry Canada and ACOA by the Canadian Science and Innovation Indicators Consortium:

> The rate of global knowledge production is so rapid that knowledge obsolesces quickly. Most scientific knowledge has a half life of less than five years. Most technological knowledge in areas of rapid technological change has a half life of less than three years. Detailed market knowledge that is enabled by IT-based interactivity has a half life of days or hours.[1328]

The "knowledge economy" has been called the "weightless economy," which, according to Danny Quah, is made up of four elements:

1. information and communications technology (ICT) and the Internet
2. intellectual property, which includes not only patents and copyrights, but more broadly, brand names, trademarks, and advertising, and even elements of financial

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[1325] Ibid., accessed. p. 7.
[1326] Peters, and Humes. "Education in the Knowledge Economy."
[1327] Locke, Wade, Charles Davis, Ron Freedman, Benoît Godin, and Adam Holbrook. *Indicators for Benchmarking Innovation in Atlantic Canada*, Montreal, Prepared for Industry Canada and Atlantic Canada Opportunities Agency, Canadian Science and Innovation Indicators Consortium, 2004; accessed April 2005; available from http://www.csiic.ca/PDF/Industry_Canada_Atlantic_Indicators.pdf.
[1328] Ibid., accessed.

and consulting services, financial exchanges, health care (medical knowledge), and education

3. electronic libraries and databases, including new media, video entertainment, and broadcasting
4. traditional libraries and databases, and pharmaceuticals.[1329]

According to Quah, these four elements constitute the fastest-growing sectors in modern economies. Others support his view and argue that in the manufacturing and service industries, intangible assets such as brands and intellectual property have become more important than physical commodities and that in fact ever "more economic activity involves processing and analyzing information, making judgments, providing services and manipulating images."[1330, 1331] According to Leadbeater:

> Globalization, deregulation and liberalization [are] driving companies to base their competitive advantage on brands and other intangible assets such as know-how, which cannot be easily imitated or traded […]. Tacit knowledge, often held in the heads of employees or embedded in corporate routines, is similarly hard for competitors to mimic.[1332]

In other words, as Lev and Zambon note, wealth creation in a highly competitive and globalized economy increasingly comes down to intangible assets, or weightless assets, which include knowledge and ideas.[1333]

According to McMurtry, the "defining principles" of education and the market place are "fundamentally contradictory" in goals, motivations, methods, and standards of excellence. He argues that there is great danger in corporate control of knowledge:

> As global economies become increasingly dependent on information as a commodity, the pressure for corporate control of knowledge and its production is likely to become more, not less, demanding. Without some effective constraints on the global process at work here, education will be made to become its opposite by what might be called 'the totalitarian moment' of the capitalist marketplace in its

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[1329] Quah, D. "A Weightless Economy," *UNESCO Courier*, vol. December, 1998: 18-21.

[1330] Leadbeater. "New Measures for the New Economy."

[1331] In John McMurtry's review of this chapter, he writes: "We may again observe here a characteristic conflation of dominant current discourse. Quah's schema conflates knowledge advance and dissemination with commercially profitable activities that have no clear basis in knowledge, and may supplant it with ideas and images to sell commodities." McMurtry, Professor of Philosophy, University of Guelph, personal communication.

[1332] Leadbeater. "New Measures for the New Economy."

[1333] Intangible assets such as knowledge and intellectual capital are very difficult to measure and do not register in traditional accounting systems. In some Nordic firms there has been an attempt to measure the value of intellectual capital with Intellectual Capital Statements, which aim to "summarize the value of an organization's capabilities and competencies, representing them as a productive factor with a value that can be recognized and possibly subjected to property rights." Lev, and Zambon. "Intangibles and Intellectual Capital: An Introduction to a Special Issue."

period of greatest triumph and global pervasion, a moment that is ironically celebrated as a 'victory of freedom' for all. What is required to keep the commodity market in its proper place and to prevent the inversion of education under its demands, is the recognition that they *are* in principle opposed, and not, as we have so far mutely accepted, related as end to means.[1334]

In the late 1980s the Canadian government launched a new approach to promoting knowledge development and ideas in science and technology research. The new policy focused on the needs of industry and set the stage for a wide range of new university-industry partnerships. This orientation continues to this day with the government's 2002 *Innovation Strategy*, which defined innovation this way:

> [Innovation] means coming up with new ideas about how to do things better or faster. It is about making a product or offering a service that no one had thought of before. It is about putting new ideas to work in our businesses and industries and having a skilled work force that can use those new ideas. And it is about aggressively pursuing new markets for Canada's products and services. Innovation is not just the job of government or the private sector. Innovation is everybody's business.[1335]

The first part of Canada's *Innovation Strategy* lists several priorities and initiatives with regard to university research:

1. support the indirect costs of university research
2. leverage the commercialization potential of publicly funded academic research
3. provide internationally competitive research opportunities in Canada[1336]

The second paper in the strategy looks at how to ensure a skilled work force capable of adapting to the ever-changing demands of the economy. The report highlights three reasons for the strategy:

1. The knowledge-based economy means an ever-increasing demand for a well-educated and skilled workforce in all parts of the economy and in all parts of the country.
2. There is a looming demographic crunch that means our future labour supply will be inadequate to meet the demands of the economy.
3. Our learning system must be strengthened if we are to meet the skills and labour force demands of the next decades.[1337, 1338]

[1334] McMurtry. "Education and the Market Model." p. 216.
[1335] Government of Canada. *Achieving Excellence: Investing in People, Knowledge and Opportunity*, Industry Canada, 2002; accessed May 25 2005; available from http://www.innovationstrategy.gc.ca/gol/innovation/site.fsf/en/in02425.html.
[1336] Ibid., accessed.

These assumptions about the relationship between learning, the education system, and the perceived needs of the economy, and the policies and funding priorities that flow from them, have had profound implications for the structure and functioning of universities, for the perceived purpose of higher education, and for the nature and method of the teaching and learning that occur within universities and other tertiary education institutions.

13.2 Funding for university research and knowledge production

University-industry "partnerships" have become ubiquitous features of campuses across the continent. Their more obvious incarnations have come in the form of on-campus advertising on sports uniforms or in bathroom stalls. In addition, choices of food and beverages are typically limited to the fast-food chain, corporation, or soft drink-company with which the university has signed an exclusive and often secret contract, and generally regardless of the health and nutritional value of the food and drink supplied or of the company's ethical record and affiliations. For example, many Canadian university campuses are supplied by Sodexho, Inc.,[1339] a subsidiary of Sodexho Alliance, the largest institutional investor in the world's largest private prison company—Corrections Corporation of America—as well as the owner of private prison companies in the U.K. and Australia. Sodexho, Inc. also has a long history of anti-union activity, and uses its own centralized supply sources often to the detriment of local suppliers and the local economy. [1340] The food supplied to students and the nature of the supply chain are not yet seen as part of the students' education.[1341]

[1337] Industry Canada. *Knowledge Matters: Skills and Learning for Canadians*, Industry Canada, 2002; accessed May 24 2005; available from
http://www.innovationstrategy.gc.ca/gol/innovation/site.nsf/en/in04135.html.
[1338] Greater detail about the Canadian Innovation Strategy and how it compares with a similar strategy in the U.K. can be found in Rosenblatt, Michael, and Jeffrey S. Kinder. "Canadian and UK Innovation Policies: A Comparative Analysis," in *Innovation, Science, Environment. Canadian Policies and Performance, 2006-2007*, ed. Doern, G. Bruce, 59-81. Montreal: McGill-Queen's University Press, 2006.
[1339] Sodexho Alliance. *Website*, accessed July 2006; available from
http://www.sodexho.com/SodexhoCorp/en/the_group/history/stage/. Sodexho, Inc. was formerly called Sodexho Marriott Services (SMS) following the 1998 merger of Marriott Management Services and the North American operations of Sodexho Alliance. In 2001, SMS changed its name to Sodexho, Inc., with Sodexho Alliance holding 53% of the shares.
[1340] Pranis, Kevin. *Students Take on Sodexho Marriott. Prison Moratorium Project Says "Not with Our Money!"* 2005; accessed July 2006; available from
http://www.resistinc.org/newsletter/issues/2001/04/pranis.html.
[1341] According to John McMurtry, the exclusion of food quality and sources from a students' education is "one of the most important determinants of successful learning—access of the learner to sufficient protein and nourishment for the nervous system to function effectively—clearly requires a more enlightened approach by schools, colleges and universities. To be fit places of education, they require the most basic conditions of learning, and these conditions certainly include whether students' brains are supplied with junk or nourishment. It is a measure of private corporate business subjugation of public educational institutions that our places of learning are so starved of funding and policy leadership that they lease out

But the more hidden, and arguably even more problematic, university-industry partnerships have to do with knowledge production and research. These partnerships have mushroomed in the wake of funding cuts by governments in the 1990s.

In the mid-1990s, the federal government made deep cuts to transfer payments to the provinces.[1342] When adjusted for inflation and population growth, the federal cash contribution available for post-secondary education in 2004 was 40% lower than in 1992-1993—or $76 per capita compared to $126 per capita, according to statistics provided by the Canadian Association of University Teachers (CAUT). In addition, the per capita provincial transfers to universities and colleges, adjusted for inflation, also fell by 8.6% between 1992–1993 and 2004–2005, with the most dramatic cuts between 1996 and 1998—a response to the massive $7 billion cut in federal transfers to the provinces that accompanied the creation of the Canada Health and Social Transfer in 1996. According to CAUT, it would take $1.2 billion of immediate investment to restore provincial spending on post-secondary education to 1992–1993 levels.[1343]

In 1990–1991, government (all levels) funding for Canadian universities accounted for nearly 70% of total revenue. By 2002–2003, the government share had dropped to 56%.[1344] In Nova Scotia and Ontario in 2002–2003, the government share was less than half of total revenues, with the rest coming from private sources, including student

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their facilities to commercial junk food suppliers without recognizing the foundational educational issue." McMurtry, Professor of Philosophy, University of Guelph, personal communication

[1342] In 1996 the Liberals eliminated the Established Programs Financing (EPF) agreement and created the Canada Health and Social Transfer (CHST), which consolidated federal transfers for health and post-secondary education (which had occurred under the previous EPF) with federal contributions for social assistance under the Canada Assistance Plan (CAP). In doing so, it cut $7 billion from the cash transfers to the provinces. In 2004–2005 the federal government divided the CHST into two funds—the Canada Health Transfer (CHT) and the Canada Social Transfer (CST) in order to achieve greater accountability in health care spending. The CST is a block fund, which now includes money for post-secondary education, social assistance and social services, including early childhood education and childcare. The block funding can be allocated in any way by the provinces, which do not have to report on how the cash transfers have been allocated. In addition to the CST, federal support for post-secondary education includes direct assistance both to students through loans, grants, scholarships, and through the tax system, and to post-secondary institutions through granting councils, Canada Research Chairs, the Canada Foundation for Innovation, and other research programs.

[1343] Canadian Association of University Teachers (CAUT). "Financing Canada's Universities and Colleges," *CAUT Education Review*, vol. 7, no. 2, 2005: 1-8, accessed October 2005; available from http://www.caut.ca/en/publications/educationreview/education-review-2007-2002.pdf.
[1344] Statistics Canada. "University Finances, 2002-2003." *The Daily*, August 19, 2004, accessed December 2004; available from http://www.statcan.ca/Daily/English/040819/d040819a.htm. Government sources include federal, provincial and municipal governments.

fees.[1345] With less money to operate, universities had to make up the shortfall from other sources. One source was from the students themselves. According to CAUT, tuitions as a percentage of university operating revenue increased significantly across the country between 1974 and 2004. Nova Scotia experienced one of the most dramatic increases. In 1974, just over 20% of university operating revenues in Nova Scotia was from tuition. By 2004, 41% was from tuition. Most of that increase occurred in the 1990s.[1346] This is largely due to the fact that in Nova Scotia between 1990–1991 and 2005–2006 operating grants from the provincial government to the province's 13 universities decreased by 29% in real terms from $286 million to just over $200 million (in 2005 constant dollars).[1347] In 1999 alone, tuitions at Dalhousie University went up by 37%, making up for about half of the shortfall.[1348]

Another source of savings was through cut-backs in faculty and staff. Between 1992-1993 and 1998–1999, the number of full-time university faculty at Canadian universities dropped by nearly 10%, from 32,699 full-time teachers in 1993 to 29,609 in 1998.[1349] According to Statistics Canada, the number of faculty grew through the 1970s and 1980s, mostly due to rising student enrolments. Budget cuts in the 1990s, along with the growing reliance on part-time teaching staff, and a slight decrease in full-time student enrolment, led to the decline in full-time faculty.[1350] However, according to CAUT, the number of full-time faculty increased between 1998 and 2003, restoring the number to 1991 levels.[1351] It should also be noted that the increase in recent years could be attributed to the increased spending announced in 2000 on the Canada Foundation for Innovation (CFI) and the creation of 2,000 research chairs at Canadian universities.

According to CAUT, funding to universities from the three federal granting councils (i.e., NSERC, SSHRC, and CIHR) decreased by 17% between 1990–1991 and 1997–1998.[1352]

[1345] Canadian Association of University Teachers (CAUT). "Public or Private? University Finances, 2002-2003," *CAUT Education Review*, vol. 6, no. 3, 2004: 1-6, accessed June 2005; available from http://www.caut.ca/en/publications/educationreview/educationreview2006-2003.pdf.

[1346] Canadian Association of University Teachers (CAUT). *CAUT Almanac of Post-Secondary Education in Canada*, CAUT, 2006; accessed July 2006; available from http://www.caut.ca/en/publications/almanac/2006-intro.pdf. p. 2.

[1347] Nova Scotia Department of Education. *University and Community College Operating Grants*, Halifax: University and Colleges Division, Higher Education Branch, Nova Scotia Department of Education, 2005.

[1348] For more detailed information on household spending on education and rising tuition fees please refer to the chapter on access and barriers to higher education.

[1349] Canadian Association of University Teachers (CAUT). *CAUT Almanac of Post-Secondary Education in Canada*, accessed. p. 5.

[1350] Statistics Canada. "Full-Time University Faculty." *The Daily*, Statistics Canada, August 8, 2000, accessed December 2005; available from http://www.statcan.ca/Daily/English/000808/d000808a.htm.

[1351] Canadian Association of University Teachers (CAUT). *CAUT Almanac of Post-Secondary Education in Canada*, accessed. p. 5.

[1352] Canadian Association of University Teachers (CAUT). "The Canada Research Chairs: Doing Industry's Research," *CAUT Education Review*, vol. 2, no. 2, 2000: 1-7, accessed October 2005; available from http://www.caut.ca/en/publications/educationreview/educationreview2002-2002.pdf. Figures are based on data from the Canadian Association of University Business Officers (CAUBO), a non-profit professional organization representing administrative and financial officers at Canadian universities. Figures are in 1992

For example, the Natural Sciences and Engineering Research Council (NSERC), like the other granting councils, experienced severe budget cuts in the mid-1990s, but overall between 1990 and 2003–2004 its expenditures increased.[1353] It should be noted, however, that the budgetary growth that occurred at NSERC "was mainly attached to the need to encourage targeted research of national importance based upon the greater use of private-public partnerships."[1354]

With less government money, universities also began to look to the "non-traditional" funding realm or the private sector. Indeed, both federal and provincial governments encouraged these kinds of collaborations, and in some cases federal research money depended on it. For example, the Natural Sciences and Engineering Research Council (NSERC), which provides the bulk of grant money for natural science and engineering research at universities, underwent a transformation in the 1990s when one of its "institutional objectives" became the promotion of "networks and partnerships between university and research programs and the private sector with the expectation of enabling knowledge transfer and the commercialization of new technologies, products and processes."[1355, 1356] To that end, incentives were created for universities to seek industry partners.[1357] For instance, funding for Industry Research Chairs (IRC) doubled between l988 and 1998, resulting in a total of 258 IRCs across the country by 1998.

It should be noted, however, that the IRC program is only one of many programs sponsored by NSERC and developed in the late 1990s to foster university collaborations with the private sector. Other programs include:

- *Industrial Research Fellowships*, which allow companies to hire a highly qualified researcher for up to two years to advance R&D in an area of strategic importance

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constant dollars. The three federal granting councils are the Natural Sciences and Engineering Research Council (NSERC), the Social Sciences and Humanities Research Council (SSHRC), and the Canadian Institutes of Health Research (CIHR).

[1353] Lopreite, Debora C. "The Natural Sciences and Engineering Research Council as a Granting and Competitiveness-Innovation Body," in *Innovation, Science, Environment. Canadian Policies and Performance, 2006-2007*, ed. Doern, G. Bruce, 106-126. Montreal: McGill-Queen's University Press, 2006. p. 111.

[1354] Ibid. p. 123.

[1355] Ibid. p. 105.

[1356] Prior to 1978, it was the National Research Council (NRC), which provided financial support for university research in Canada. In 1978 the grants and scholarships division of NRC became NSERC. Since then, NSERC has always concerned itself to some degree with facilitating collaborations between R&D sectors in Canada, including between university and industry. But it was only in the late 1980s and early 1990s, around the same time when Canada was looking for "competitive advantage in a knowledge-based economy" that there was a pronounced shift in emphasis at NSERC for the "need for more integration between Canadian universities and the private sector." Ibid.

[1357] There are three federal university research-granting agencies: Social Sciences and Humanities Research Council (SSHRC), Canadian Institute of Health Research (CIHR)—formerly the Medical Research Council—and the Natural Sciences and Engineering Research Council (NSERC). In 2002–2003 they had a combined annual budget of approximately $1.3 billion.

- *Industrial Postgraduate Scholarships*, which offer a cost-effective way to enhance a company's research capabilities
- *Undergraduate Student Research Awards in Industry*, which allow a company to develop a working relationship with promising undergraduate researchers—before they graduate
- *Collaborative Research and Development Grants*, which expand research capacity by giving companies access to the state-of-the-art knowledge and experience found in Canadian university research labs
- *Technology Partnership Program Grants*, which support applied research at the commercialization end of the R&D spectrum, with extensive industry collaboration
- *Research Partnership Agreements*, which offer the advantage of three way cost sharing to capitalize on the complementary R&D capacity of industry, government and university research labs
- *Research Networks*, which advance a company or university research agenda by bringing together a diverse group of researchers to collaborate on a common theme
- *Strategic Projects*, which help make the costs of high-quality, pre-competitive research more manageable by supporting university research in partnership with industry
- *The New Faculty Support Program*, which allows companies to share the cost of setting up a promising researcher in a university faculty position that is relevant to their business
- *Networks of Centres of Excellence*, which fosters partnerships between industry and university (this program is administered jointly by NSERC, CIHR, SSHRC, and Industry Canada)
- *Industrial Research Chairs*, which allow a company to work with a distinguished researcher and research team on a major research initiative in an area important to the company[1358]

In 2005–2006 NSERC committed $865 million to university-based research and training, but universities supplemented this with millions of additional dollars in industry funds, at least some of which seem to be attached to corporate agendas. For example, twenty-nine academic chairs resulted from Dalhousie University's fundraising drive of the late 1990s called the *Capital Campaign.* They included:

- The Purdy Crawford Chair in Business Law: IMASCO donated $350,000 for the law school position named after Purdy Crawford, the head of its Board of Directors. At the time, IMASCO owned Imperial Tobacco, Shoppers Drug Mart, and Canada Trust.
- The Shell/ Killam Chair in Petroleum Engineering: Shell contributed $250,000 toward this new position at Dalhousie's new Oil and Gas Institute.

[1358] Lopreite. "The Natural Sciences and Engineering Research Council as a Granting and Competitiveness-Innovation Body." p. 115.

- The Chair in Business Informatics: Partially sponsored by MTT and Nova Scotia Power. (Informatics is another word for data mining—where companies collect information about consuming / shopping habits and look for patterns.)
- The Dr. Paul Janssen Research Chair in Psychotic Disorders: funded by Janssen-Ortho, Inc, a subsidiary of Johnson & Johnson, and manufacturers of drugs for psychiatric illnesses.

In 2000, the federal government announced increased spending for the Canada Foundation for Innovation (CFI), and the creation of 2,000 research chairs at Canadian universities. Between 1998 and 2005, CFI awarded a total of more than $2.2 billion to Canadian universities, 63% of that to universities in Ontario and Quebec.[1359] According to the Canadian Association of University Teachers (CAUT), there are significant problems associated with the Canada Research Chairs (CRC) program, including:

- 20% of the chairs are allocated for the humanities and social sciences (SSHRC), 35% to CIHR and 45% to NSERC—not accurately reflecting the proportion of scholarly activity in these fields, since about 42% of university faculty work in the humanities and social sciences and about the same proportion of graduate students study in the humanities and social sciences. In other words, federal research dollars appear to be increasingly tilted towards those fields that have commercial applications. According to CAUT: "By allocating proportionately fewer resources to the social sciences and humanities, the CRC program ignores the degree of research activity currently undertaken in these fields and undervalues the economic, social and cultural contributions of this research."[1360]
- Canada Research Chairs do not have to go through same vetting or hiring process as other professors, and yet they are guaranteed tenure and full-time status.[1361]
- The allocation of Canada Research Chairs and associated research funding represents a shift toward research initiatives closely linked to the private sector, with universities being refashioned as "research shops" for industry.
- Only 6% of the new chairs are allocated for small universities, while more than half are allocated to just 10 of Canada's 91 universities. Thus, the program rewards the largest and most financially sound universities situated in the major economic centres.
- New infrastructure such as offices and laboratories will be required to accommodate these new positions. According to CAUT, the 2,000 new chairs will require the equivalent of 50 new university buildings for offices and labs. The

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[1359] Canadian Association of University Teachers (CAUT). *CAUT Almanac of Post-Secondary Education in Canada*, accessed. p. 44.

[1360] Ibid., accessed.

[1361] Traditionally, competitions for faculty positions at universities are two-tiered. That is, competitions are first open only to Canadian citizens and landed immigrants. If a qualified candidate cannot be found, the competition is then opened up to non-residents. This qualification does not apply to Canada Research Chairs. This is particularly ironic given that the Minister of Industry, who is responsible for implementing the program, stated that the Research Chairs program is an attempt stop the alleged "brain drain" of highly skilled Canadians abroad.

federal government is providing infrastructure grants (up to $125,000 per chair) through the CFI, provided that for every 40 cents provided by the CFI, 60 cents is found from private sector partners or the provinces. If external funding cannot be found then it is expected to come from the university itself. However, much of the matching funding is anticipated to come from private sources, in which case the CFI will give the private funder a de facto veto over which research chairs receive infrastructure funding.[1362] In other words, in order for a research project to go ahead, private (industry) funding must be obtained. Therefore, only those projects of interest to industry will be able to access the infrastructure funding from the CFI.

According to CAUT, the federal government designed the CRC program to "advance greater ties between university research and industry," but warned that "at the same time, conflicts between corporate interests and university policies are raising serious ethical and public interest issues."[1363]

According to NSERC, the whole point of the initiative is to respond to industrial needs. Tthe NSERC Web site clearly states that industry has much to gain from partnering (and funding) university research, including access to skills and expertise as well as specialized facilities and equipment.[1364] Canadian industries generally have little in-house research capacity or expertise, or specialized development facilities, so access to university expertise and infrastructure is also in their interest and can save more costly investments in their own research and specialized facilities.

For example, in 1999, a lucrative alliance was forged between Dalhousie University and the Finnish-Swedish pulp and paper giant Stora Enso[1365] resulting in the infusion of $600,000 by the company to create a Dalhousie Chair in Forestry Genetics and Biotechnology. Research was to focus on mapping the genetic make-up of economically important trees, namely pine and spruce, with a view to create the ultimate in "supertrees"—tall, straight, fast growing, and pest resistant—a formula designed to increase productivity and ultimately profits for the company.[1366, 1367]

[1362] Canadian Association of University Teachers (CAUT). "The Canada Research Chairs: Doing Industry's Research."

[1363] Ibid.

[1364] Natural Sciences and Engineering Research Council of Canada (NSERC). *Website*, accessed July 2005; available from http://www.nserc.ca/index.htm.

[1365] Stora Enso was formed by the merger of Swedish mining and forestry products company Stora and Finnish forestry products company Enso in 1998. It has approximately 42,500 employees and in 2002 it was the fifth largest pulp and paper manufacturer in terms of revenue. The Finnish State is the biggest shareholder in the company.

[1366] Pannozzo, Linda. "Masters of the University," in *Missing Pieces: An Alternative Guide to Canadian Post-Secondary Education*, ed. Doherty-Delorme, Denise and Erika Shaker, 85-90. Ottawa: The Canadian Centre for Policy Alternatives, 1999.

[1367] Dalhousie University. *News Release: Canada and Sweden's International Research Partnership in Tree Genetics*, Halifax: Dalhousie University, 1998.

NSERC's incentives program meant that Stora Enso's investment was matched by federal funds that came directly from tax dollars. Stora Enso's money went toward direct expenditures such as researcher salaries, but it was the public purse that funded the indirect costs, such as infrastructure, including the expensive gene mapping and gene probe equipment that made the research possible in the first place. Stora Enso's "donation" would also qualify for tax credits—an incentive that Canadian taxpayers therefore also subsidised. When all is said and done, Canadians will have contributed more money to the tree genetics and "supertree" research than the Finnish-Swedish company itself. Given the serious ecological questions that have been raised about genetic engineering, it is questionable whether the public will benefit at all from this infusion of taxpayer dollars.[1368]

According to Statistics Canada, in 2002–2003 the higher education sector in Canada spent approximately $7.4 billion on research and development, up 16% from the previous year.[1369] Of this, 39% ($2.9 billion) was spent on health sciences, 42% ($3 billion) was spent on other natural sciences and engineering, and 19% ($1.4 billion) was spent on social sciences and humanities.[1370] But the most significant change over time is in the sources of this funding.

First, it is important to note that universities themselves fund more research and development in the higher education sector than any other contributing body. Thus, in 2002-2003, 46% of research and development was funded by universities, 24% was funded by the federal government, 11% came from the provincial governments, and 9% was funded by the business sector. The remaining 9% came from private non-profit organizations and foreign sources combined. Sponsored research, which is essentially research funded by an outside agency or business through a grant or contract, accounts for more than half of all research and development in the higher education sector in Canada.[1371]

Since 1988–1989, the proportion of R&D funding from business enterprises has more than doubled, from 4% in 1988–1989 to 9% in 2002–2003. When funding from business enterprises and private non-profit organizations are combined, the proportion of funding from private sources increased from 10% to 17%. In the same time period, the proportion of research and development funding from the universities themselves decreased from 56% to 46%. The share of funding from governments—federal and provincial—remained

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[1368] Pannozzo. "Masters of the University."

[1369] In Statistics Canada's report on this subject, the "higher education sector" includes all universities, colleges of technology, and other institutes of post-secondary education. It also includes all research institutes, experimental stations, and clinics operating under the direct control of, administered by, or associated with, the higher education establishments.

[1370] Statistics Canada. *Estimation of Research and Development Expenditures in the Higher Education Sector, 2002-2003*, Catalogue no. 88F0006XIE19, Ottawa: Science, Innovation and Electronic Information Division, Statistics Canada, 2004. Table 1.

[1371] Ibid.

steady at about 24% and 11% respectively.[1372] According to CAUT, in the 1990–1998 period, university research funding from federal sources (i.e., the three granting councils) declined by 17%.[1373] The decline, particularly after 1994–1995, was enough to push Canadian universities to greater reliance on business and other private sources and to change the culture of funded research substantially.

13.3 Commercialization and intellectual property

According to Statistics Canada, commercialization in the public sector refers to:

> … the transfer of intellectual property (IP) to the private sector through the licensing of protected IP (patents, copyrights, trademarks, etc.), or through the creation of spin-off firms, or a combination of both. The act of transferring the IP in return for money is the commercialization.[1374]

For example, at Dalhousie University, a technology transfer and licensing office was set up in l988 to facilitate bringing research to market. In 1996 this office became NU-TECH (Nova Universities Technology, Inc.), focusing on intellectual property development, licensing, and commercializing of research discoveries and inventions developed at Dalhousie University and the Nova Scotia Agricultural College. Today, it is called the Industry Liaison and Innovation Office. Basically, researchers go there to commercialize their work, while the Industry Liaison and Innovation Office goes out to find university research with commercial potential. Offices such as these exist at most universities in Canada.

According to a report for the Canada Foundation for Innovation, there are currently few data and very little detailed information available on the commercialization of university research in Canada. The report notes that aggregate data are available through Statistics Canada, but that the statistical agency does not make public any information on individual universities. "There is a need for more publicly available, comprehensive information on the performance of Canadian universities in technology transfer, upon which informed decisions on public policy can be made."[1375]

[1372] Ibid.

[1373] Canadian Association of University Teachers (CAUT). "The Canada Research Chairs: Doing Industry's Research."

[1374] Earl, Louise, Fred Gault, and Michael Bordt. *Summary: Meeting on Commercialization Measurement, Indicators, Gaps and Frameworks*, Catalogue no. 88F0006X1E7, Ottawa: Science, Innovation and Electronic Information Division, Statistics Canada, 2004.

[1375] Clayman, Bruce P. *Technology Transfer at Canadian Universities: Fiscal Year 2002 Update*, Canada Foundation for Innovation, 2004; accessed; available from http://www.sfu.ca/vpresearch/vprreports.htm. p. 3.

Intellectual property is handled differently at different universities, but at Dalhousie University, when research is publicly funded, the IP is automatically owned by the investigators. If the Dalhousie investigators then go to the technology transfer office (now the Industry Liaison and Innovation Office) for services, they sign over their IP to the university, and from that point on, revenue from fees or royalties comes back through the Industry Liaison and Innovation Office and is shared 50/50 between the university and the investigators. The license could also go into a new or "spin-off" company, which could net the university royalties indefinitely.[1376, 1377]

When industry funds research, however, IP is up for grabs. Research contracts have stipulations and conditions that usually place the ownership of IP with industry. When both public and private money are involved (as is the case with NSERC funding) the situation isn't as clear. Often the researchers own the IP, while the company has first right of refusal on anything of economic utility. Typically, researchers are not allowed to publish their findings until the company has secured a patent.[1378]

According to Dr. Howard Dickson, former Vice-President of Research Services at Dalhousie University, most companies interested in a license are multi-nationals, which tend to create jobs overseas or in one of the company's head offices. He says researchers should be forming spin-off companies, creating the jobs locally. But the risks of starting a new company are daunting, and plenty fail. So, many universities have set up "incubators," essentially space for these unhatched companies. Professors-cum-entrepreneurs now have a financial stake in their findings, which cannot help but influence the kind of research undertaken.[1379]

According to Statistics Canada, between 1999 and 2001, income from the commercialization of intellectual property (IP) at universities nearly doubled from $18.9 million in 1999 to $44.4 million in 2001.[1380] By 2003, income from IP increased to nearly $56 million. In addition to increased revenues, the number of patents and spin-off companies also increased between 2001 and 2003: the number of inventions reported or disclosed by researchers to universities and hospitals increased by 3%, from 1,105 to 1,133; the number of patent applications filed increased by 34% from 932 to 1,252; and the total number of patents held increased by 43%, from 2,133 to 3,047.[1381]

[1376] For example, the re-hydrating sport drink, Gatorade, named after the University of Florida football team and developed by University of Florida researchers, has netted the university $1 million a year in royalties.

[1377] Pannozzo. "Masters of the University."

[1378] Ibid.

[1379] Ibid.

[1380] Statistics Canada. *Intellectual Property Commercialization in the Higher Education Sector, 2001*, 2003; accessed 2005 July; available from http://www.statcan.ca/Daily/English/031020/d031020d.htm.

[1381] Statistics Canada. "Commercializing the Results of Research in Canadian Universities and Hospitals: An Update for 2003," *Innovation Analysis Bulletin*, vol. 7, no. 3, 2005: 11-12. p. 11.

In 2002–2003, Canadian universities and hospitals created 64 spin-off companies to commercialize their technologies—bringing the total to 876 to date.[1382]

Statistics Canada also reports that IP commercialization differs across regions of Canada, and that it reflects the proportion of research funding received by that region. For example, in 2003, the Atlantic region's 19 universities and hospitals received $186 million in research funding from all sources, compared with 37 Ontario institutions, which received at total of $1.6 billion in the same year. Not surprisingly, Atlantic institutions, which only received 4% of total research funding, accounted for only 4% of inventions disclosed, 5% of inventions protected, and 7% of spin-off companies to date. Ontario, on the other hand, received 38% of total research funding and accounted for 36% of inventions disclosed, 35% of inventions protected, and 36% of spin-off companies created to date.[1383]

13.4 Effects of corporate influence on knowledge production

These trends have far-reaching effects on the nature and role of universities, the perceived function of higher education in Canadian society, and even on the type, content, and quality of knowledge disseminated. These major changes, according to some critics, such as Giroux, are not without problems:

> As large amounts of corporate capital flow into the universities, those areas of study in the university that do not translate into substantial profits get marginalized, underfunded or eliminated. Hence, we are witnessing both a downsizing in the humanities as well as the increasing refusal on the part of universities to fund research in areas of public health or science which place a high priority on public service. The new corporate university appears to be indifferent to ideas, forms of learning, and modes of research that do not have any commercial value.[1384]

Peters and Humes note:

> The knowledge economy raises new ethical and legal questions concerning intellectual property rights and represents fundamentally important issues concerning not only the creation, production and transmission of knowledge but also the value, meaning and ownership of knowledge.[1385]

[1382] Ibid.
[1383] Ibid. p. 12.
[1384] Giroux. "Selling out Higher Education."
[1385] Peters, and Humes. "Education in the Knowledge Economy."

Some of these criticisms and related issues stemming from the increased corporate funding of research and consequent commercialization of knowledge are explored in more detail below.

13.4.1 Effect on humanities

The Social Sciences and Humanities Research Council (SSHRC) is the main source of public money for research projects in the fields of the social sciences and humanities. In 2005–2006 its grants and scholarships budget totaled $292 million—45% for research, 48% for chairs, fellowships, and other awards, and 7% for knowledge "mobilization" or dissemination. In its strategic plan, released in 2005, SSHRC projects its budgetary needs will nearly double by 2010–2011 to $544 million. Most notably, the proportion allocated for the dissemination of research results into the public domain increases from 7% to 13%. In other words, $20.6 million is currently allocated toward "knowledge mobilization." In the new budget plan this increases to $70.8 million by 2010.[1386]

In its Strategic Plan, SSHRC acknowledged pressure from government to make research practical:

> After years of sustained public investment in research, governments expect to demonstrate the benefit of research through increased commercialization and by putting research knowledge into practice, policy and public discourse. The challenge for the social sciences and humanities is to expand the idea of 'return on investment' to include benefits other than mere commercial ones.[1387]

In other words, a formalized shift toward dissemination of research is under way, with an increased focus on getting research results into the public domain. From SSHRC's perspective, however, this dissemination has potential public benefits that go far beyond the narrower commercial applications described in the previous section.

In Canada, in 2003–2004, funding from SSHRC represented 12.4% of the total funding provided by the three federal granting councils to Canadian universities. In that same year, 44.4% of funding came from NSERC and 43.2% from CIHR.[1388] In other words, 88% of all granting council funds were provided in the fields of health sciences and other natural sciences and engineering (see Table 13 below).

[1386] Social Sciences and Humanities Research Council (SSHRC). *Knowledge Council: SSHRC, 2006-2011*, SSHRC, 2005; accessed November 2005; available from http://www.sshrc.ca/web/about/publications/strategic_plan_e.pdf.

[1387] Ibid., accessed.

[1388] Canadian Association of University Teachers (CAUT). *CAUT Almanac of Post-Secondary Education in Canada*, accessed. Table 5.1, p. 44.

Table 13. Federal research funding from granting council awards, Canada, 2003–2004

GRANTING COUNCIL	FUNDING	PERCENT OF TOTAL
SSHRC (social sciences and humanities)	$159,613,000	12.4
NSERC (natural sciences and engineering)	$573,561,000	44.4
CIHR (health sciences)	$558,102,000	43.2
TOTAL	**$1,291,276,000**	**100**

Source: Canadian Association of University Teachers (CAUT). *CAUT Almanac of Post-Secondary Education in Canada*, CAUT, 2006; accessed July 2006; available from http://www.caut.ca/en/publications/almanac/2006-intro.pdf.

According to Trevor Ross, the Associate Dean of Research at Dalhousie's Faculty of Arts and Social Sciences, within the field of social sciences and humanities overall, social sciences research enjoys more funding than humanities research,. In 2001–2002, the most recent year for which data were available, political science and sociology / anthropology received $223,000 combined in research grants. In that same year, classics, English, French, history, philosophy, and Russian studies received $194,000 in research grants. At the same time, psychology and economics, which are also social sciences but are housed in the Faculty of Science at Dalhousie University, received in excess of $3.3 million in grants and contracts.[1389]

According to Ross:

> The perception is that the Social Sciences and Humanities Research Council and other public funding sources favour projects that are run on a social science model (i.e., multiple researchers working collaboratively on empirical research designed to provide knowledge about matters of policy or current interest). [The federal government is] formalizing this shift toward policy-driven research."[1390]

The increased reliance on corporate funding described in the previous section does not apply to those areas of study that are not easily commercialized. According to Ross, while public funding for humanities and social sciences research dropped since the 1980s, there was "no compensating shift to private sources […] the interest simply isn't there." However, in the last decade or so, he says there has been some reversal of this trend with an increase in public funding for research in all fields of study, including humanities and

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[1389] Dalhousie University Research Services. *Research Grants and Contracts by Faculty*, Dalhousie University, 2001-2002; accessed October 2005; available from http://researchservices.dal.ca/fundingfaculty02.html.
[1390] Ross, Trevor, Assistant Dean, Research, Faculty of Arts and Social Sciences, Dalhousie University. Linda Pannozzo, Email correspondence, July 25 and 27. Halifax, 2005.

social sciences. While there is still some money for small, independent humanities research projects, Ross notes that the funding is increasingly being "targeted" at specific kinds of research programs (such as the Canada Research Chairs program); strategic grants for research on designated topics (such as privacy and multiculturalism); support for large-scale multi-authored interdisciplinary projects, many of which do involve humanities researchers along with specialists from other fields; and projects that deal with matters of social policy like SSHRC's Initiative for the New Economy (INE) program.[1391]

Ross notes:

> Not long ago there was talk here of eliminating programs in Music and Theatre, now it seems that arts programs are doing more with less (larger classes, fewer faculty, new programs that are created from cross-listing existing courses in different departments).[1392]

According to the Canadian Federation for the Humanities and Social Sciences, closings and mergers of research units, departments, and faculties in the liberal arts is an international trend.

> In a society focused on practical knowledge, they must defend their role and function in an atmosphere of intense skepticism about their utility […]. As the university becomes more accountable in a 'knowledge society,' intrinsic values of academic freedom and autonomy succumb, and with them the type of knowledge production we have known in the past.[1393]

According to Peters and Humes:

> The early twenty-first century seems destined to become an era of closure for some departments, faculties and institutions, especially as the spectacular growth in participation experienced during the last few decades levels out and institutions are forced not only to compete with each other in the market for student places but also to absorb the cost of providing extra, unfunded, student places, possibly at declining levels of funding.[1394]

This reality could result not only in the loss of programs, particularly in the liberal arts, but in a loss of knowledge in general, as certain key areas of study and their attendant insights and understanding become less available.

[1391] Ibid.

[1392] Ibid.

[1393] Grosjean, G., J. Atkinson-Grosjean, K. Rubenson, and D. Fisher. *Measuring the Unmeasurable: Paradoxes of Accountability and the Impacts of Performance Indicators on Liberal Education in Canada*, Ottawa: Canadian Federation for the Humanities and Social Sciences, 2000.

[1394] Peters, and Humes. "Education in the Knowledge Economy."

According to another study by the Canadian Federation for the Humanities and Social Sciences, the shift that is taking place in universities may "undermine some of the best parts of the liberal tradition." The study authors ask: "What are the prospects for university courses that cannot be justified on obvious utilitarian grounds? Will intellectual initiatives that generate insufficient funding, limited employment prospects, or low enrolments be possible?" The authors conclude: "In short, our universities are becoming more corporate, more technocratic, more utilitarian, and far more concerned with selling products than with education."[1395]

In Canada, overall, university enrolment in fields related to technology, such as engineering and mathematics, rose dramatically between 1992–1993 and 2001–2002 (most recent data). Enrolment in mathematics and in computer and information sciences rose 44% in the ten-year period, and in architecture, engineering, and related technologies, enrolment increased by more than 18%. The three fields of study that saw declines in enrolment in the ten-year period were education at 19%, humanities at 14%, and social and behavioural sciences and law at 6%.[1396]

The evidence provided above indicates a clear pattern of commercialization occurring in universities, which is anti-educational and is undermining the transmission and learning of knowledge—and the creation of knowledge.

13.4.2 Implications for small universities

Despite the implications for the humanities and social sciences, the affiliation between universities and industry has been lauded by governments at all levels. Critics argue that incentives created to encourage universities to seek private money have all but forced many cash-strapped researchers to look for industry partners. This reality has put many smaller universities at a further disadvantage when competing for research funds. As was noted by the Standing Committee on Industry, Science and Technology, data support the anecdotal evidence that researchers at small universities "tend to have less success in granting agency competitions and receive smaller grants on average than their large university counterparts. Consequently, funds are concentrated in a few, large universities."[1397]

[1395] Fisher, D., K. Rubenson, Kathryn Rockwell, Garnet Grosjean, and Janet Atkinson-Grosjean. *Performance Indicators: A Summary*, Ottawa: Canadian Federation for the Humanities and Social Sciences, 2000.
[1396] Statistics Canada. "University Enrolment." *The Daily*, July 30, 2004, accessed December 2004; available from http://www.statcan.ca/Daily/English/040730/d040730b.htm.
[1397] Government of Canada. *Canada's Innovation Strategy: Peer Review and the Allocation of Federal Research Funds. Report of the Standing Committee on Industry, Science and Technology*, Ottawa: Government of Canada, 2002.

For example, according to data provided to the Standing Committee, in 2001, 8% of the total research money granted by the three main federal funding agencies combined was awarded to small universities, while 63% was awarded to large universities. Similarly, in 2001, 5% of all research money was granted to universities in Atlantic Canada, 28% to Quebec, 39% to Ontario and 28% to Western Canada.[1398]

> The Committee believes that regional differences in success rates and funding levels likely reflect the relatively large number of small universities and low levels of value-added industrial activity and / or provincial investment in R&D in certain regions of the country. Researchers at small universities face barriers such as high teaching loads and small graduate programs that reduce their capacity to conduct research relative to their large university counterparts.[1399]

One case study that looked at private sector collaboration and commercialization of research at Newfoundland's Memorial University found that the level of commercialization of research was very low. A survey of university researchers found there were both a lack of awareness and a lack of availability of private sector partners. In other words, smaller universities, which are typically located in less populated areas of the country, do not have the same access to, or present the same cache, to industry.

In addition, the Memorial University survey found that there were researchers who saw the commercialization of research as a "disturbing pattern that should not be promoted." The study also pointed out that researchers spent very little time commercializing their research. Only 8% confirmed they spent any time commercializing their research, and only 2% of researchers confirmed spending more than 25% of their time doing so.[1400]

The Memorial survey also found:

- An affiliation with the private sector is important in establishing partnership with the private sector and for facilitating the commercialization of research
- Researchers from the Faculty of Engineering and Applied Sciences appear to be more willing to engage in partnerships with the private sector and to attempt to commercialize their research
- Collaboration appears to be important in promoting partnerships with the private sector and for researchers who try to commercialize their research[1401]

[1398] Ibid.

[1399] Ibid.

[1400] Locke, Wade, Scott Lynch, and Barbara Girard. *University Research Activity, Private Sector Collaboration and the Commercialization of Research in an Academic Environment: Memorial University of Newfoundland as a Case Study*, Ottawa: Atlantic Canada Opportunities Agency and Industry Canada, 2002.

[1401] Ibid.

13.4.3 Censorship, conflict of interest, and ownership of knowledge

According to Naomi Klein, corporate research projects across North American universities are used for everything from:

> … designing new Nike skates, developing more efficient oil extraction techniques for Shell, assessing the Asian market's stability for Disney, testing the consumer demand for higher bandwidth for Bell or measuring the relative merits of a brand-name drug compared with a generic one."[1402]

In fact, many of the alliances between industry and universities have resulted in research projects that are raising concerns among some critics about whether universities are (so to speak) selling their souls.

> As universities become increasingly strapped for money, corporations are more than willing to provide the needed resources, but the costs are troubling and come with strings attached […]. As the boundaries between public values and commercial interests become blurred, many academics appear less as disinterested truth seekers than as operatives for corporate interests. But there is more at stake than academics selling out to the highest corporate bidder. In some cases, academic research is compromised, and corporations routinely censor research results that are at odds with their commercial interests.[1403]

An example of this kind of censorship is illustrated by the case of Dr. David Kern. In 1997, Kern was an associate professor at Brown University in Rhode Island as well as an occupational health physician at university-affiliated Memorial Hospital. Kern was commissioned by a local textile manufacturer to investigate two cases of lung disease in the factory. Upon investigation, Kern and his colleagues were surprised to find six more cases of the disease among the 150 employees of the plant. In the general population the incidence was one in 40,000.

> Kern's occupational medicine unit […] led the investigation that defined flock worker's lung, although the National Institute for Occupational Safety and Health (NIOSH) was also involved. As the pattern of the disease emerged-most strikingly, an incidence at least 50 times that of interstitial lung disease in the general population-even career scientists at NIOSH, accustomed to seeing strange and disturbing things in their line of work, sat up and took notice.[1404]

[1402] Klein. *No Logo: Taking Aim at the Brand Bullies*.

[1403] Giroux. "Selling out Higher Education."

[1404] Davidoff, Frank. "New Disease, Old Story," *Annals of Internal Medicine*, vol. 129, no. 4, 1998: 327-328.

Kern and his colleagues had come upon a new and potentially fatal occupational disease. They submitted a scientific communiqué about the disease outbreak and presented their findings to a group of international scientists. Shortly thereafter, Kern's tenure-equivalent position was terminated, and he was told to shut down his occupational health clinic and withdraw his previously submitted communiqué. University and hospital administrations sided openly with the textile company and pointed to a confidentiality agreement Kern had signed with the company to protect "trade secrets." [1405, 1406]

Another example of censorship is the 2001 case of Dr. David Healy, a clinical psychiatrist and one of the world's leading scholars on anti-depressant drugs, who was hired to become the new director at the Centre for Addiction and Mental Health, a facility affiliated with the University of Toronto. Healy's job offer was rescinded by senior staff at the centre shortly after he delivered a speech at the university in 2001, in which he discussed evidence that Prozac causes people to commit suicide at a rate of one in 1,000.

> I happen to believe that Prozac and other SSRIs can lead to suicide. These drugs may have been responsible for one death for every day that Prozac has been on the market in North America. In all likelihood many of you will not agree with me on this—you haven't seen the information that I have seen. However, we can all agree that there has been a controversy about whether there may be a problem or not. What I believe you will also have to agree with is the fact that since the controversy blew up, there has not been a single piece of research carried out to answer the questions of whether Prozac does cause suicide or not. Designed yes, carried out—no.[1407]

Healy went on to discuss the conflicts of interest that arise from drug company-funded research.

> Aside from the inadequacies of our clinical trial methods, professors of psychiatry are now in jail for inventing patients.[1408] A significant proportion of the scientific literature is now ghost written. A large number of clinical trials done are not reported if the results don't suit the companies sponsoring the study. Often trials are multiply reported so that anyone trying to meta-analyse the findings can have

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[1405] Kern, Dr. David G. *Secrecy in Science: Exploring University, Industry, and Government Relationships. A Recent Case Study*, Cambridge, Speech delivered at MIT, 1999; accessed November 17 2005; available from http://www.aaas.org/spp/secrecy/Presents/Kern.htm.

[1406] Klein. *No Logo: Taking Aim at the Brand Bullies*.

[1407] Healy, Dr. David. *Psychopharmacology and the Government of the Self*, Lecture delivered at the Centre for Addiction and Mental Health, University of Toronto, November 30, 2001; accessed October 2005; available from http://www.pharmpolitics.com/feb2healy.html.

[1408] In a recent example of this, Dr. Jon Sudbo, an oncologist at Oslo's Norwegian Radium Hospital, admitted to making up patients and case histories for a cancer study published in October, 2005 in a highly respected medical journal the *Lancet.* According to 2006 newspaper reports on the case, Sudbo fabricated patients and of the 908 people in his study, 250 shared the same birthday. BBC News. *Cancer Study Patients 'Made up'*, London, 2006; accessed August 2006; available from http://news.bbc.co.uk/2/hi/health/4617372.stm.

a real problem trying to work out how many trials there have been. Within the studies that are reported, data such as quality of life scale results on antidepressants have been almost uniformly suppressed. To call this science is misleading.[1409]

It has been suggested that the latter comments, which challenge the way industry influences research, led to Healy's loss of favour at the Centre. In 2000, 52% of the Centre's research money came directly from drug companies and, in the previous year, Eli Lilly, the manufacturer of Prozac, donated $1.5 million to the Centre.[1410] Healy sued the Centre for Addiction and Mental Health, citing possible pharmaceutical company influence in the hospital's hiring process. The dispute was eventually settled. Healy was given visiting professor status at the University of Toronto Medical School, where he would visit for one week per year for three years, "to interact with a range of students, trainees and faculty." For his part, Healy accepted that drug companies were not directly involved in the loss of the directorship, but in a joint statement between Healy and the Centre, he reasserted his firm belief that his clinical appointment was rescinded because of the controversial nature of his speech.[1411]

In addition to the censorship of findings, problems also arise when there are financial conflicts of interest, such as when investigators are either paid directly by the drug company and/ or own shares in the company marketing the drug. For example, an article published in the *Journal of the American Medical Association* suggested that 43% of women and 31% of men suffer from "sexual dysfunction," but did not disclose that two of the study's authors served as paid consultants to Pfizer, the company that manufactures Viagra. Furthermore, financial backing from a drug company can also influence the design of a study, so that favourable results are more likely. According to a 1996 study published in the *Annals of Internal Medicine,* 98% of papers based on industry-sponsored research reported favourably on the drugs in question, compared with 79% of papers based on research that was not funded by the drug companies.[1412]

For example, in 2003, Dr. Charles Nemeroff, chairman of the department of psychiatry and behavioural sciences at Emory School of Medicine in Atlanta, published an article in the journal *Nature Neuroscience,* where he described and rated roughly two dozen experimental treatments for depression, saying some were disappointing while others were promising. It was discovered later that Nemeroff had financial ties to three of the therapies he reported on favourably. In one of the cases, he held shares in the company stock. In another case he was a paid consultant to the drug company and had signed an agreement under which he would receive a sum of $100,000 if he helped the drug

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[1409] Healy. *Psychopharmacology and the Government of the Self*, accessed.

[1410] Macintyre, Darrow. *Hard to Swallow. CBC News and Current Affairs*, Toronto: CBC The National, 2001.

[1411] Toronto, University of. *Healy Legal Dispute Settled: Academic Accepts Pharmaceutical Companies Played No Role in Rescinding of CAMH Appointment*. Vol. 2005 University of Toronto, 2002.

[1412] Giroux. "Selling out Higher Education."

succeed in the marketplace. In the third instance, Nemeroff failed to disclose that he held the patent on the treatment—a lithium patch, which he said would improve patients' ability to tolerate the drug.[1413]

Industry funding, particularly in the field of medicine, may also be potentially harmful to the public. The recent example of liver specialist and University of Toronto researcher and clinician, Dr. Nancy Olivieri, is a case in point. Olivieri was sued in 1998 by Canadian drug giant Apotex, Inc. when she published the negative results of her findings on Deferiprone, a drug the company was developing for children with the fatal genetic liver disease Thalassemia. Olivieri and others found that the drug not only did not control body iron burden in patients with the disease, but it could actually worsen the condition.[1414] The drug company, which sponsored Olivieri's research, only wanted to publicize positive results, and the contract's fine print contained the clause that the company had the right to suppress the findings for one year after the completion of the drug trials.[1415]

In 2001, as a result of this and other similar cases of corporate censorship, the world's most prominent medical journals adopted guidelines allowing them the right to refuse to publish pharmaceutical company-sponsored study results unless the researchers were guaranteed scientific independence. The *New England Journal of Medicine, The Lancet,* the *Annals of Internal Medicine,* and the *Journal of the American Medical Association* were among the journals that published the new policy in their editorials.[1416]

However, a year later, the International Committee of Medical Journal Editors (ICMJE) realized the initial policy and guidelines were not enough. The *New England Journal of Medicine*'s editorial noted:

> Concerned about threats to the integrity of clinical trials in a research environment increasingly controlled by private interests, the International Committee of Medical Journal Editors has issued revised guidelines for investigators' participation in study design, access to data, and control over publication […]. The integrity of industry-sponsored clinical research has come under increasing scrutiny. Until recently, criticism focused on investigators' financial conflicts of interest with industry sponsors and the publication bias arising from pressure by

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[1413] Petersen, Melody. "Undisclosed Financial Ties Prompt Reproval of Doctor." *The New York Times*, New York, August 3, 2003.

[1414] Olivieri, Nancy F., Gary M. Brittenham, Christine E. McLaren, Douglas M. Templeton, Ross G. Cameron, Robert A. McClelland, Alastair D. Burt, and Kenneth A. Fleming. "Long-Term Safety and Effectiveness of Iron-Chelation Therapy with Deferiprone for Thalassemia Major," *New England Journal of Medicine*, vol. 339, no. 7, 1998: 417-423.

[1415] Olivieri went ahead and published her findings in the *New England Journal of Medicine*. Her position was not supported by the hospital or the university administrations. She was subsequently demoted from her top-level position at the hospital, and was finally reinstated after a lengthy legal battle.

[1416] Okie, Susan. "A Stand for Scientific Independence: Medical Journals Aim to Curtail Drug Companies' Infuence." *The Washington Post*, Washington, D.C., August 5, 2001, A 1.

sponsors to withhold negative research results. However, recommendations for dealing with conflicts of interest do not address other potential sources of bias in industry-sponsored research, including the role of the sponsor in the study design, investigators' access to data, and control over publication.[1417]

The revised guidelines called for full disclosure of the sponsor's role in the research, as well as assurances that the researchers are independent of the sponsor, are fully accountable for the design and conduct of the clinical trial, have independent access to all trial data, and control all editorial and publication decisions.[1418]

In the year prior to issuing the revised guidelines, the ICMJE surveyed more than 100 medical schools in the U.S. about their agreements with industry sponsors. It was an area about which little was known. Among the ICMJE findings:

> Academic institutions routinely participate in clinical research that does not adhere to ICMJE standards of accountability, access to data, and control of publication. These standards address long-standing concern about the integrity of research published in biomedical journals. We found that academic institutions rarely ensure that their investigators have full participation in the design of the trials, unimpeded access to trial data, and the right to publish their findings […]. Our findings suggest that a reevaluation of the process of contracting for clinical research is urgently needed.[1419]

13.4.4 Implications for basic research

Until recently, governments and universities have supported basic research—that is, research conducted for the sake of curiosity, knowledge, and understanding, and for the public interest. But this is changing. For example, the Natural Sciences and Engineering Research Council (NSERC) provides *discovery* grants, which essentially support basic research at universities. In 1994, discovery grants accounted for 56% of the grants awarded by NSERC. By 2003–2004, 48% of the grants were allocated to *discovery*.[1420] During the same time period, the proportion of NSERC's budget allocated to both *innovation* (i.e., R&D leading to technology transfer) and *people* (which includes funding for industry research chairs) increased.

[1417] Schulman, Kevin A., Damon M. Seils, Justin W. Timbie, Jeremy Sugarman, Lauren Dame, Kevin P. Weinfurt, Daniel B. Mark, and Robert M Califf. "A National Survey of Provisions in Clinical-Trial Agreements between Medical Schools and Industry Sponsors," *New England Journal of Medicine*, vol. 347, no. 17, 2002: 1335-1341.

[1418] Ibid.

[1419] Ibid.

[1420] Lopreite. "The Natural Sciences and Engineering Research Council as a Granting and Competitiveness-Innovation Body." p. 111.

Basic research is lacking in short-term returns, according to a 1999 report released by Industry Canada. The Expert Panel on the Commercialization of University Research, selected by the Prime Minister's Advisory Committee on Science and Technology, was disproportionately represented by industry—six of the nine members were corporate executives. Their stated goal was to come up with ways to maximize the economic benefits of publicly funded research by commercializing it. The report recommended that "innovation," defined as the process of bringing new goods and services to market, become the fourth mission of Canadian universities, in addition to teaching, research, and community service, and that universities "must make reasonable efforts to commercialize intellectual property they have found to have innovative potential."[1421]

The report was not well received by the Canadian Association of University Teachers (CAUT). CAUT's main concern with the document was that the recommendations would:

> … facilitate the expansion of corporate control over university research […] because the report's recommendations encourage the steering of research toward the commercial interests of private corporations, undermine the tradition of open communication between scholars, and provide for the expropriation of results of university research to the corporate sector.[1422]

Furthermore, CAUT was opposed to the panel's recommendation that universities must incorporate a professor's track record in commercialization into the promotion and tenure process. "This is good news for researchers developing highly marketable products, no matter how trivial they are. It spells career stagnation or worse for those who specialize in theoretical physics, child poverty or English literature."[1423]

CAUT also raised serious concerns about how the commercialization, and thus patenting, of products would affect the university's long-standing tradition of open communication among scholars.

> The Panel envisages the end of the model of broad discourse between academics and its replacement with a narrow vertical path of communication between individual researchers, university administrators and, at the top of the hierarchy, a private corporation.[1424]

[1421] Industry Canada. *Public Investments in University Research: Reaping the Benefits. Report of the Expert Panel on the Commercialization of University Research*, Catalogue no. C2-441/1999, Ottawa: Industry Canada, 1999.

[1422] Canadian Association of University Teachers (CAUT). *CAUT Commentary on the Final Report of the Expert Panel on the Commercialization of University Research*, CAUT, 1999; accessed October 24 2005; available from http://www.caut.ca/en/issues/commercialization/commentaryreserachcommercialization.pdf.

[1423] Ibid., accessed.

[1424] Ibid., accessed.

Since its inception in the early 1950s, CAUT has been involved in efforts to "guard" the autonomy of universities and the "freedom of the academic community to undertake research, publish its findings, teach, engage in intellectual discourse, comment upon and criticize others' ideas and policies." One of CAUT's most important policy statements begins: "The common good of society depends upon the search for knowledge and its free exposition."[1425]

It warns that if private interests influence research, in terms of both what is done and how it is reported, then basic research will suffer:

> Equally troubling is the influence private research funders have over the type of research conducted. Private corporations are interested in applied research that has short-term commercial possibilities. Basic research is a very hard sell in the boardrooms of Canadian corporations. University researchers are increasingly encouraged to pursue projects that will more likely attract private funding or provide a short-term commercial outcome, and are discouraged from conducting basic research. Yet, basic research has been a cornerstone of medical advances in the past and will remain so in the future.[1426]

The editors of the *New England Journal of Medicine* and other prominent medical journals worldwide echoed these concerns and warned that one consequence of closer ties to industry would be that researchers would undertake studies for which they could obtain funding rather than studies that are simply scientifically important:

> That would mean more research on drugs and devices and less designed to gain insights into the causes and mechanisms of disease. It would also skew research toward finding trivial differences between drugs, because those differences can be exploited for marketing.[1427]

According to the Canadian Institute for Health Information, spending on drugs in 2005 was projected to account for 17.5% ($25 billion) of the total spending on health care in Canada.[1428] In addition, drugs are one of the fastest growing portions of spiralling health care costs. Since 1985, drug spending in Canada has increased from $4 billion to $25 billion in 2005—a six-fold increase.[1429]

[1425] Ibid., accessed.

[1426] Canadian Association of University Teachers (CAUT). *Submission to the Royal Commission on the Future of Health Care in Canada*. Vol. 2005 CAUT, 2002.

[1427] Angell, M. "Is Academic Medicine for Sale?" *New England Journal of Medicine*, vol. 342, no. 20, 2000: 1462-1544.

[1428] Canadian Institute for Health Information. *Total Health Expenditure, by Use of Funds, Canada, 2005*, Ottawa, 2006; accessed August 2006; available from
http://secure.cihi.ca/cihiweb/en/media_10may2006_fig4_e.html.

[1429] Canadian Institute for Health Information. *Total Drug Expenditure, Canada, 1985 to 2005*, Ottawa, 2006; accessed August 2006; available from
http://secure.cihi.ca/cihiweb/en/media_10may2006_fig1_e.html.

In 2001, a commentary was published in the *Canadian Medical Association Journal* (CMAJ) by seven prominent Canadian university professors from a number of disciplines including law, bioethics, economics and health sciences expressing great concern with the alliances being forged between universities and industry, especially in regards to pharmaceuticals. They wrote:

> The duty of universities is to seek truth. The duty of pharmaceutical companies is to make money for their shareholders. Drug companies that fail to do so go out of business. Universities that subordinate the disinterested search for truth to other ends lose credibility and their claim to a privileged status in society. If either abandons its fundamental mission, it ultimately fails. At times, institutional imperatives are bound to conflict. Research can either serve or subvert the public interest. Its findings may advance knowledge and support useful innovation, or be filtered and twisted to support prejudices or gain commercial advantage. The capacities and integrity of researchers, and their universities, can be enhanced or corrupted in the process. Some partnerships are united by an open-minded quest for discovery; others are unholy alliances whereby researchers and universities become handmaidens of industry. Whatever ethical bed we make, we lie in.[1430]

The authors of the commentary proposed eight rules for governing university-industry relationships:

1. A standard, Canada-wide contract governing university-industry relationships, enshrining the right of the academic to disclose potentially harmful clinical effects immediately, and publish freely after a modest interval.
2. Guidelines to determine whether a proposed industry-university project is of sufficient intellectual originality and interest to qualify as academic activity. If the project does not qualify, it should be defined as a service or consulting contract and should be priced and managed as such.
3. Mandatory filing of all university-industry agreements and contracts with the overseeing body, and registration of all clinical trials.
4. Mandatory written debriefing signed by all parties at the conclusion of every university-industry agreement, to be filed with the provost or equivalent of the university and the overseeing body, with a hearings process to resolve disputes.
5. A certification and rating system for industry that assesses such areas as scientific integrity, observance of contracts, commitment to intellectual freedom, degree of interference in the conduct of research and appropriateness of financial arrangements.
6. A surtax levied on all university-industry contracts, the proceeds from which would help both to fund a core office and its oversight activities and to cover the

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[1430] Lewis, Steven, Patricia Baird, Robert G. Evans, William A. Ghali, Charles J. Wright, Elaine Gibson, and Francoise Baylis. "Dancing with the Porcupine: Rules for Governing the University-Industry Relationship," *Canadian Medical Association Journal*, vol. 165, no. 6, 2001.

costs of defending researchers against industry harassment or formal litigation as vigorously as the Canadian Medical Protective Association protects doctors against malpractice claims.

7. The appointment of an ombudsperson to whom researchers and industry can refer concerns about partnerships.
8. Participation in and endorsement of the refined and expanded set of rules based on these general principles and structures by all agencies funding health research.[1431]

In 2002, the Canadian Association of University Teachers submitted a list of recommendations to the Royal Commission on the Future of Health Care in Canada that included a section on public health research. It cites the case of Nancy Olivieri as an example of what can happen when "industry's interests guide university research."

The CAUT recommendations include:

- That the federal government more adequately fund basic medical research in areas such as drug safety, public health and health promotion.
- That the mandate and programs of the Canadian Institutes of Health Research reflect the primacy of public health objectives over commercial interests.
- That the federal government thoroughly review the current regulation of health research in Canada and make changes to, or through, legislation or regulations to ensure the safety of Canadians is adequately protected.
- That Health Canada should impose by requirement, by statute or regulation, that a clinical investigator neither be asked to, nor agree to limit her / his freedom to disclose any risks identified in investigations where Health Canada has jurisdiction.
- That Health Canada should adopt a policy of establishing an independent inquiry whenever a clinical trial is prematurely terminated as a result of a disagreement between a sponsor and the investigator on identification of risk.
- That the federal government ensure that Health Canada has adequate personnel and financial resources to protect the public interest in the regulation of pharmaceuticals.[1432]

13.4.5 The Public Knowledge Project

Education Professor John Willinsky of the University of British Columbia is concerned about improving the quality of public knowledge as a public resource. He advocates that the "vast and complex accumulation of knowledge," generated by social science research

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[1431] Ibid.

[1432] Canadian Association of University Teachers (CAUT). *Submission to the Royal Commission on the Future of Health Care in Canada*.

should serve the public good and be more widely available and accessible to the public through the use of Internet technology:[1433]

> Imagine the many professors around the world who are working in anthropology, economics, political science, psychology, sociology, and in professional schools of law, commerce, education, and health. Then consider how the vast majority of them are engaged in researching how people live, coming up with not only the median death rate in abdominal cancer, but with a greater understanding of what happens in families and schools, street gangs and golf clubs, prison cells and court houses, voting booths and shop floors. The resulting wealth of knowledge, even as it is carefully screened by academic journals, now amounts to more than all but the richest university libraries can afford […]. This knowledge could do more for the decisions and deliberations by which people live, more in helping them assess the risks and possibilities which they face […]. Among the ready-and-waiting sources of under-utilized public knowledge, the social sciences seem well positioned to add to people's understanding, to the self-determination of their lives, and to their collective action and democratic processes.[1434]

Currrently, most scholarly research published in peer-reviewed journals is available online only through very expensive subscriptions that only well-financed research libraries can afford.[1435] The public can access the information if they can get to the physical library and use an open terminal there, or they can pay the cost of a subscription, which might equal the cost of a hardback book, to access a pay-per-view copy of the article they wish to read. Often the research in question has been financed through public funds, and publishers generally do not pay the authors. Willinsky notes that research libraries are also finding their own access hampered by the "growing corporate concentration among scholarly publishers," which impedes the circulation of knowledge. For example: "An estimate from EPS Market Monitor places ownership of the $7 billion Science, Technology and Medical research publishing industry at 62% of the market, with the top four players, beginning with Reed Elsevier, controlling fully half of that industry."[1436]

Together with other collaborators, Willinsky has initiated the "Public Knowledge Project" (PKP) at the University of British Columbia as a prototype website for knowledge exchange between social science research and the public, starting with the

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[1433] Willinsky, John "Introduction," in *If Only We Knew: Increasing the Public Value of Social Science Research*. New York: Routledge, 2000, accessed August 2005; available from http://pkp.ubc.ca/publications/if.html.

[1434] Ibid.

[1435] Willinsky, John "The Scholarly Wing of the Public Cybrary and the Right to Know," in *New Libraries and Knowledge Spaces: Critical Perspectives on Information and Education.* Mahwah, New Jersey: Lawrence Erlbaum, 2004, accessed August 2005; available from http://research2.csci.educ.ubc.ca/eprints/archive/00000001/.

[1436] Ibid. p. 5.

topic of education and technology.[1437] In general, the PKP is experimenting with new ways of structuring and publishing knowledge. It is a federally- and privately-funded research initiative, which received new funding in 2004 for three years from the Social Sciences and Humanities Research Council of Canada to study how to enhance the reading of research in online environments. In addition, since 2001, the PKP has offered free, open source software to manage and publish journals and conference papers. Open Journal Systems and Open Conference Systems software are used globally to reduce publishing costs, enhance indexing, and increase access to knowledge. The prototypes the PKP is developing will be used to investigate, through field tests, how interface design, data architecture, and software tools will affect public and professional connections to educational research. Willinsky summarizes the PKP as follows:

> Considerable research will need to go into the design of a meeting place, a commons or public space, for policy makers, researchers and the public, which would seek to improve how this knowledge works with what people know, need to know, and may need to know. The possibility here is for greater engagement among researchers, practitioners, policy officials, and the public around the nature of knowledge's public and professional contribution. The Public Knowledge Project will experiment with the design of such public spaces and use those designs to research how, for example, researchers and policy makers can literally link their related work, among issues and across domains and disciplines. The possibilities of bringing different orders of knowledge and experience, reflection and action, into inspiring points of proximity is certainly part of the promise of these new technologies and needs to be pushed and tested as such […]. Turning social science research into a public resource is itself a project in *public education*, insofar as it will enable people to learn more, to find it easier to learn, and most importantly, to better appreciate the value of learning as a point of civic participation.[1438]

[1437] Public Knowledge Project (PKP). *Website*, University of British Columbia, accessed August 2005; available from http://www.pkp.ubc.ca/.

[1438] Willinsky, John *Improving the Value of Research for Policymakers, Journalists, and the Public. An Initiative of the Public Knowledge Project. A Proposal Submitted to the Max Bell Foundation*, University of British Columbia, 2001; accessed August 2005; available from http://www.pkp.ubc.ca/program/bell.doc.

14. The Mental Informal Learning Environment in the Public Commons

14.1 The mental environment context

The learning environment of a culture has a direct impact on the formal and informal knowledge and learning processes of the public. It can either encourage lifelong learning or create obstacles to learning. In the case of Bhutan, which is keenly interested in infusing its learning environment with GNH values and principles, consideration of the learning environment might be especially important. The learning environment contains both physical and mental elements, including those elements known as the "mental environment." [1439] Kalle Lasn, the driving force and founder of Adbusters Media Foundation in Vancouver, compares the learning environment of any society with the public commons, since it is a common-property resource like air and water. He argues: "We need to protect ourselves from unwanted incursions into it, much the same way we lobbied for nonsmoking areas."[1440]

Being aware of the learning environment and understanding the impact it has on public awareness, knowledge, and learning leads to a focus on the broader social context of learning. In other words, rather than learning being an individual responsibility alone, in the context of the learning environment, learning becomes a social responsibility, and creating a sustainable learning environment becomes one of those responsibilities.

Aristide Esser suggested that human knowledge comprises an environment in the same way that the physical world comprises a physical environment, and that attention needs to be paid to this mental environment in the same way that attention is paid to the physical environment.[1441] Thus, this mental environment, which we describe below, can be referred to as one component of a learning environment that needs to be sustainable and able to promote the wellbeing of the ecosystem.

The term *ecology* is derived from the Greek word for dwelling and is generally used to signify the interactions of plants and animals with their habitats.[1442] In 1983, Gaines and Shaw, asking if there is a knowledge environment, examined the legitimacy and utility of broadening the term *ecology* to include both mind and knowledge in order to form an

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[1439] Lasn. *Culture Jam: How to Reverse America's Suicidal Consumer Binge - and Why We Must*. p. 123.
[1440] Ibid. p. 13.
[1441] Esser, Aristide H. "Ecology of Knowledge," *Man-Environment Systems*, vol. 11, no. 4, 1981. cited in Gaines, Brian R., and Mildred L. G. Shaw. "Is There a Knowledge Environment?," in *The Relation between Major World Problems and Systems Learning*, ed. Lasker, G., 35-41, Society for General Systems Research, 1983. Reprint, accessed December 2005; available from http://pages.cpsc.ucalgary.ca/~gaines/reports/SYS/SGSR83B/SGSR83B.pdf.
[1442] Gaines, and Shaw. "Is There a Knowledge Environment?"

"ecology of knowledge."[1443] They believe that constructs used in discussing biological ecology can also be used in the "ecology of knowledge," such as the concept of pollution, to take one example, which they defined as "that which makes an environment less habitable for a species."[1444] Their premise was that our mental environment can be polluted (by noise, propaganda, misinformation, and information overload, for example), and that both a healthy mental environment and a healthy physical environment are important for the survival of the planetary ecosystem, and its inhabitants.

In his 1999 best-selling book, *Culture Jam,* Lasn views the pollution of our mental learning environment as being as dangerous for freedom in society, and for our mental and physical wellbeing, as the pollution in our physical environment.[1445] According to Lasn, Western minds, especially, have become a virtual dumping ground of pollutants— manipulative ads, distorted news, untold violence, spin and hype. We can cope with the media onslaught to a degree. However, all signs suggest that the cumulative effects of this toxic culture—on our stress levels, our moods, our relationships, our worldviews, even our mental health—could become one of the most pressing issues of our generation.[1446] Lasn, now a self-described activist, is committed to changing the public mental environment, including the role of media, advertising, and consumption in society, and specifically to redirecting the commercial media culture towards ecological and social awareness.

As we discuss in more detail below, the mental environment is composed, in part, of information in the general atmosphere or public commons, such as dominant ideas, noise, or advertising jingles that get picked up by our minds and then transferred to other minds. For example, a high level of ambient noise in an environment can make it difficult to concentrate and focus on what one is attempting to learn.

In addition, underlying assumptions that go unexamined by the public, such as the ideas of needing constant change and speed in order to progress, could actually undermine learning and sustainable progress. We looked at some of these underlying assumptions in Chapter 5: Learning Values. In that chapter, C.A. Bowers' work relates to the mental environment when he discusses the underlying assumptions of the dominant Western paradigm.[1447] Ideas which form these mostly unconscious underlying assumptions of the dominant paradigm can inhibit openness to different ideas or paradigms that may potentially be more sustainable that those that makeup the norm. In this way, the mental environment has an impact on informal learning in the general populace.

[1443] Ibid.

[1444] Ibid. p. 8.

[1445] Lasn. *Culture Jam: How to Reverse America's Suicidal Consumer Binge - and Why We Must*.

[1446] Adbusters Magazine. *Website*, Adbusters Media Foundation, accessed October 2005; available from http://www.adbusters.org/network/about_us.php.

[1447] Bowers. *Mindful Conservatism: Rethinking the Ideological and Educational Basis of an Ecological Sustainable Future*.

As previously noted, aspects of a healthy mental environment that is conducive to learning might include a collective state of mind that is open, aware, clear, uncluttered, and spacious.[1448] An unhealthy learning environment that inhibits learning would then be characterized by the opposite of each of these elements. Thus, a closed, self-absorbed environment dominated by propaganda, consumerism and/ or the need for constant entertainment is likely to leave little openness for learning. Instead it could encourage ignorance and uncertainty; inhibit awareness and intuition; foster confusion, lack of clarity, and disinformation; and be characterized by mental clutter created by information overload.

To take an extreme case, it is quite clear that a closed, totalitarian regime does not provide a favourable context for genuine learning and education, no matter how effectively schools are teaching literacy, numeracy, science, or any of the other fields assessed by conventional education indicator systems. Ironically, therefore, it is possible for a society to rank very highly on most conventional indicators of educational attainment while creating formidable barriers to true learning and openness.

For a measure of population wellbeing, current education indicators are therefore clearly inadequate, and efforts must be made to assess the broader learning *context,* here labelled the "learning environment." Because this learning *context* is so crucial to effective and genuine education, we shall discuss some of the elements that may inhibit learning in some detail here. Although this discussion is focused on Western culture, there is evidence that this culture is beginning to pervade other cultures globally, especially through television, film, and other media.

14.2 Memes or information viruses

Recently, study of the mental environment has brought the concept of memes to the forefront.[1449] A meme is a "unit of information" such as a "catchphrase, a concept, a tune, a notion of fashion, philosophy or politic" that leaps "from brain to brain to brain."[1450] These memes underlie and form the social context we live within. An analogy to the learning environment might be made to the electrical signals and waves that surround and affect us, whether or not we are aware of the effect. The memes, then, might be analogous to the actual electrical signals, which are picked up by our senses as well as by our machines. Both formal and informal learning happens within the environment of memes, and are affected by this atmosphere.

[1448] Hayward. *Perceiving Ordinary Magic: Science & Intuitive Wisdom*.
[1449] Journal of Memetics: Evolutionary Models of Information Transmission (JOM-EMIT) Website. *A Brief Overview and History of Memetics*, Centre for Policy Modelling, Manchester Metropolitan University, n.d.; accessed December 2005; available from http://jom-emit.cfpm.org/overview.html.
[1450] Lasn. *Culture Jam: How to Reverse America's Suicidal Consumer Binge - and Why We Must*. p. 123.

According to Lasn, memes have tremendous power to influence social, economic, and environmental culture, and, therefore, it is important to recognize their impact on social outcomes.[1451] Lasn argues: "Potent memes can change minds, alter behaviour, catalyze collective mindshifts, and transform cultures. Which is why meme warfare has become the geopolitical battle of our information age. Whoever has the memes has the power."[1452]

In this section, we first define the concept of memes and then look briefly at the social and cultural criteria necessary for memes to spread and affect the learning environment. From the perspective of an educated populace—the key concern of this literature review and study—it can be argued that conventional Western education systems often reinforce patterns and habits established by the often unconscious spread of memes. By contrast, true learning would ensure that learners are not held captive by memes, but are capable of seeing reality in its unique and ever-changing forms.

The concept of a meme therefore has great significance for educational and learning processes, as it deals directly with the issues both of how information and knowledge are spread, and of which particular memes currently permeate the learning environment and thereby act as a filter for new ideas. Pervasive memes can act as subtle "censors," which limit genuine learning. For example, they create norms that result in testing new ideas only against accepted norms, rejecting those that do not fit with the accepted norm, and filtering out potentially fresh and unique experiences. In this way—by creating patterns and norms that attempt to "solidify" reality rather than accept its ever-changing nature—memes create a subtle, and frequently unconscious, context for all learning.

From this perspective, it might even be argued that the truest and most helpful education is simply learning to identify and expose memes for what they are, in order not to be held prisoner by them, and to learn to distinguish between helpful and destructive memes. If Lasn is correct that "whoever has the memes has the power," then the ability to recognize and expose memes will constitute a serious challenge to all forms of conventional authority that rely on memes to hold people's minds captive and to influence their behaviour, buying patterns, passivity, and unquestioning acceptance of rules and conventions.

14.2.1 Definition of memes

Ethologist Richard Dawkins introduced the term "meme" in 1976 in his popular book, *The Selfish Gene*.[1453] In this context, a meme signified a unit of the evolution of knowledge and human culture analogous to the biological gene or genetic replicator. The term itself was derived from the Greek word *mimema* meaning "something imitated."

[1451] Ibid.

[1452] Ibid. p. 123.

[1453] Dawkins, Richard. *The Selfish Gene*, London: Oxford University Press, 1976.

Subsequently, it has been used in areas such as the evolution of language, computer science, evolutionary learning theories applied to individuals, groups, and society, and evolutionary epistemology.[1454, 1455] Memetics has recently arisen as "a method for scientific analysis of cultural evolution," or, in other words, the study of how an idea gets replicated, although there is debate concerning the analysis among those working in this nascent field.[1456]

The most popular informal use of the term refers to a meme as a contagious "virus of the mind."[1457] Susan Blackmore, in her book, *The Meme Machine,* synthesized work in the area, and referred to a meme as whatever is copied from one person to another persona or passed from one mind to another.[1458] She defined a meme as information that replicates itself, or evolves, through imitation in popular culture. A meme includes anything that can be learned or remembered such as thoughts, ideas, theories, moods, habits, skills, songs, stories, advertising jingles, or any other kind of information. The *Principia Cybernetica* defines a meme as:

> … a contagious information pattern that replicates by parasitically infecting human minds and altering their behavior, causing them to propagate the pattern. Individual slogans, catch phrases, melodies, icons, inventions, and fashions are typical memes. An idea or information pattern is not a meme until it causes someone to replicate it, to repeat it to someone else. All transmitted knowledge is memetic.[1459]

Bouissac quotes N.K. Humphrey concerning the autonomy of memes:

[1454] Journal of Memetics: Evolutionary Models of Information Transmission (JOM-EMIT) Website. *A Brief Overview and History of Memetics*, accessed.

[1455] Evolutionary epistemology is the analogy between the creation of ideas and evolution, which was developed into a full epistemology of knowledge by Karl Popper, who noted that a fundamental criterion for every scientific theory is that it must be "falsifiable", i.e., able to undergo selection. "Evolutionary epistemology is an approach that sees knowledge in the first place as a product of the variation and selection processes characterizing evolution. It notes, first, that the original function of knowledge is to make survival and reproduction of the organism that uses it more likely. Thus, organisms with better knowledge of their environments would have been preferred to organisms with less adequate knowledge. Second, evolutionary epistemology notes that the individual, ontogenetic development of knowledge is also the result of variation and selection processes, but this time not of whole organisms, but of "ideas" or pieces of potential knowledge. Thus, the typical pattern of scientific discovery is the generation of hypotheses by various means (variation), and the weeding out of those hypotheses that turn out to be inadequate (selection)." From: Heylighen, Francis. "Evolutionary Epistemology," in *Principia Cybernetica Web*, ed. Heylighen, F., C. Joslyn and V. Turchin. Brussels: Principia Cybernetica, 1995, accessed January 2005; available from http://pespmc1.vub.ac.be/EVOLEPIST.html.

[1456] Wikipedia. *Meme*, 2005; accessed December 2005; available from http://en.wikipedia.org/wiki/Meme.

[1457] Blackmore, Susan. *The Meme Machine*, London: Oxford University Press, 1999.

[1458] Ibid.

[1459] Grant, Glenn. *Memetic Lexicon*, Share-Right, Principia Cybernetica Web, 1990; accessed January 2005; available from http://pespmc1.vub.ac.be/MEMLEX.html.

> "[M]emes should be regarded as living structures not just metaphorically but technically. When you plant a fertile meme in my mind you literally parasitize my brain, turning it into a vehicle for the meme's propagation in just the way a virus may parasite the genetic mechanism of a host cell. And this isn't just a way of talking—the meme for, say 'belief in life after death' is actually realized physically, millions of times over, as a structure of the nervous systems of individual men the world over."[1460]

Silby uses the first four notes of Beethoven's 5th symphony as an example of a successful meme that inhabits the Western mind and is replicated on paper, in books, on audiotape, on compact disks, and in computer hard-drives.[1461]

> The best way to think of a memetic unit is to consider it to be the smallest idea that copies itself completely while remaining intact. So the first four notes of Beethoven's 5th is a meme, but the first 3 is not. The 4th note is always there making up the memetic unit. The entire symphony is a huge collection of small memetic units—a memeplex.[1462]

Bouissac asserts that within the context of memes, theories in a culture can propagate and replace other theories, and as such, "theories are entities in competition with each other. Some are short lived or remain confined to a small circle of minds; others spread among much larger groups of thinkers, researchers, and teachers; some gain the status of worldviews, or commonsense, by taking hold of whole populations."[1463] Bouissac also gives examples of memes in the relative autonomy of ideas:

> Traditional philosophies and religions have developed an ontology of ideas, narratives, instructions and rituals which take such autonomy for granted (e.g., Plato's ideas; divine words embodied in sacred texts; rituals identified as divine beings in Hinduism). Moreover, secular poets, philosophers and scientists have often referred to the *sui generis* dynamism of ideas or theories as quasi agencies independent from their own psyches. Metaphorical expressions in many languages emphasize this puzzling impression: one comes across an idea, one may yield to the power of a worldview or a system, one may be inspired, possessed, turned on by a theory, and so on.

[1460] Humphrey , N.K., cited in Bouissac, Paul. "Editorial: Memes Matter," *The Semiotic Review of Books*, vol. 5, no. 2, 1994; accessed December 2005; available from http://www.chass.utoronto.ca/epc/srb/srb/5-2edit.html.

[1461] Silby, Brent. *What Is a Meme?*, 2000; accessed January 2005; available from http://www.def-logic.com/articles/what_is_a_meme.html.

[1462] Ibid., accessed.

[1463] Bouissac, Paul. "The Construction of Ignorance and the Evolution of Knowledge," *University of Toronto Quarterly*, vol. 61, no. 4, 1992: 460-472; accessed January 2005; available from http://users.lycaeum.org/~sputnik/Memetics/IGNORANC.TXT. p. 10.

Considering the way in which myths seem to unfold and transform their structures as they drift across continents from population to population, Levi-Strauss once noted that 'The Ojibwa Indians consider myths as "conscious beings," with powers of thought and action' and claimed that his goal was "to show not how men think in myths, but how myths operate in men's minds without them being aware of the fact.' Someone can also identify with a particular theory and passionately fight for it—many humans have died for a worldview and still do—and, sometimes, can as easily switch to another one without noticeable detrimental effect on his / her organism and mental life.[1464]

At the macro level, memes take on the pattern of cultures.[1465] They evolve and spread through society "like a virus," as independent life forms, in ways that can be harmful or beneficial. In Western culture, the scientific method, which requires empirical evidence and observation in order to accept a "truth," is an example of a powerful meme affecting the culture,[1466] as are the public assumptions that Bowers discusses, which we reviewed earlier.[1467]

Marketing and advertising strategies in Western societies make use of memes to influence and persuade consumers. Chielens notes: "When the field of marketing became interested in memetics, they tried to define the criteria to create a good meme in order to use these criteria to help create 'Marketing Epidemics' and improve marketing strategies."[1468] As we discuss in the section on media literacy below, it is important for the public to understand how advertisers deliberately use memes to influence consumption patterns in the public.

Examples of common memes, which have a major influence on culture, include:

- Technology: cars, paper clips, etc. Technology clearly demonstrates mutation as well, which memetic (or genetic) progress requires. Many paper-clip designs have emerged throughout history, for example, with varying degrees of longevity, fecundity, and copying fidelity (i.e., memetic 'success'). An often-cited example of 'technology as meme' involves the building of a fire.
- Jingles: advertising slogans set to an engaging melody.
- Earworms: songs that one can't stop humming or thinking.
- Jokes: or at least those jokes popularly considered funny.
- Proverbs and aphorisms: for example: 'You can't keep a good man down.'

[1464] Ibid. p. 11.
[1465] Wikipedia. *Meme*, accessed.
[1466] Ibid., accessed.
[1467] Bowers. *Mindful Conservatism: Rethinking the Ideological and Educational Basis of an Ecological Sustainable Future*.
[1468] Chielens, Klaas. *The Viral Aspects of Language: A Quantitative Research of Memetic Selection Criteria*, Memetics, 2003; accessed January 2005; available from http://memetics.chielens.net/master/Thesis.pdf.

- Nursery rhymes: propagated from parent to child over many generations, sometimes with associated actions and movements.
- Children's culture: games, activities, and taunts typical for different age groups.
- Epic poems: once important memes for preserving oral history; writing has largely superseded them.
- Fashions: especially clothing styles such as blue jeans.
- Medical and safety advice: 'Don't swim for an hour after eating' or 'Steer in the direction of a skid.'
- Movies: very memetic given their mass replication. Movies tend to cause people to replicate scenes or repeat popular catch phrases
- Popular concepts: these include Freedom, Justice, Ownership, Open Source, Egoism, or Altruism.
- Consciousness and the self.[1469]

14.2.2 Criteria for the spread of memes

Memes that are easy to understand, remember, communicate to others, and that get expressed in behaviour are the ones most likely to spread.[1470] Informal learning can be the result of spreading memes.

There are two general types of meme hosts: human hosts and vectors. Humans who consider and think about memes are considered hosts, and those who do not reflect on memes are considered to be "inactive hosts."[1471]

Vectors are inanimate objects such as books, computers, or graffiti, which store memes but cannot reflect upon the meme. According to Silby, memes can be regarded as living structures that may become separated from their original embodiment in human minds.[1472] For example, they can be encoded, or "hosted," in written text, visible (or vocal) action, musical notation, neural structures of the brain, and digitized structures, as in a computer.[1473] Chielens notes that computer viruses can be analogous to memes as non-biological programs that are capable of self-replication and mutations.

Heylighen suggests that in order to be replicated, a meme, and by extension, also learning, must pass successfully through four subsequent stages:

1. assimilation by an individual, who thereby becomes a *host* of the meme
2. retention in that individual's memory

[1469] Wikipedia. *Meme*, accessed.
[1470] Grant. *Memetic Lexicon*, accessed.
[1471] Chielens. *The Viral Aspects of Language: A Quantitative Research of Memetic Selection Criteria*, accessed.
[1472] Silby. *What Is a Meme?*, accessed.
[1473] Ibid., accessed.

3. expression by the individual in language, behaviour or another form that can be perceived by others;
4. transmission of the thus created message or *meme vehicle* to one or more other individuals. This last stage is followed again by stage one, thus closing the replication loop. At each stage there is selection, meaning that some memes will be eliminated.[1474]

Silby notes that memes that are not good at replication die out: "Libraries are full of memetic fossils in the form of books that contain a multitude of ideas that are never looked at." Ancient songs and stories that were once sung or told but not written down and have since been lost are examples of extinct memes. Fires, such as the great Alexandra fire that destroyed the ideas of the ancients, electrical failures, and other changes in the environment can also eliminate memes.[1475]

Which memes will most successfully pass all the stages of replication and end up in the public memory can be modelled by a series of selection criteria. Klaas Chielens of Vrije Universiteit Brussel conducted an experimental online survey of approximately 200 university students in an attempt to quantify the social and cultural criteria for meme spreading to find out if memetic spreading can be tested.[1476] The general purpose of the survey was to confirm that the selection criteria had a clear correlation with the success rate or fitness of the memes.

For his survey, Chielens used selected criteria of meme spreading developed by Heylighen. He suggests: "It is hard to objectively measure someone's urge to belong to a certain social category or the cultural pressure of a behavior. To be able to do a quantitative research it is necessary to use criteria with a limited definition."[1477] The six criteria chosen to test in the survey, taken from Heylighen's more extensive list, included: novelty, simplicity, danger, benefit, authority, and replication pressure. The survey asked the respondents to rank each criterion on a scale of one to five, as it related to questions about a series of nine computer virus hoaxes. Each of the computer virus hoaxes was valued on the basis of the six criteria to determine which criteria were most helpful to the computer virus hoax meme in encouraging the hoax to spread. The hoaxes asked about were typical, unsolicited email messages warning a particular virus had been released on computer systems and describing the danger involved. Typical questions for the criteria included the following:

[1474] Heylighen, Francis. *What Makes a Meme Successful? Selection Criteria for Cultural Evolution*, Brussels, Belgium, CLEA, Free University of Brussels, n.d.; accessed January 2005; available from http://pespmc1.vub.ac.be/Papers/MemeticsNamur.html. p. 1.
[1475] Castlefranci, C. "Towards a Cognitive Memetics: Socio-Cognitive Mechanisms for Memes Selection and Spreading," *Journal of Memetics - Evolutionary Models of Information Transmission*, vol. 5, 2001; accessed October 2005; available from http://jom-emit.cfpm.org/2001/vol5/castelfranchi_c.html.
[1476] Chielens. *The Viral Aspects of Language: A Quantitative Research of Memetic Selection Criteria*, accessed.
[1477] Ibid., accessed. p. 30.

Novelty or originality: Is this an original idea or have you seen messages like this before? Does the content of the message strike you as being unexpected or novel? (1: Not Original / 5: Very Highly Original)

Simplicity: How easy is it to understand this message? Is it hard to grasp or is it pretty clear and simple? (1: Very Hard / 5: Very Easy)

Danger and Benefit are sub-criteria of *Utility*.
Danger: Does the message contain a threat that reflects: (1: Low Danger / 5: High Danger)

Benefit: How much advantage could you get out of the message? Does the information in the message seem useful? (1: no benefit / 5: very high benefit)

Authority: Does this message appear to be backed up by a trusted and reliable source or expert? (1: Not trusted (no source) / 5: Very Trustworthy)

Replication pressure: The degree of replication pressure indicates how far this message urges you to spread it further and communicate it to other people. (1: No demand / 5: Very high demand)

Chielens used the results to rank the criteria by correlating their importance to the fitness of the hoaxes or memes:

> A positive correlation will, in this research, indicate that the meme's fitness can be related to the criterion; a negative correlation will mean that the spreading degree of the meme is also dependent on this criterion but in an opposite way. If the study would show that a high simplicity rating would correlate with a high fitness level of the meme, this would mean that the simpler the structure of a hoax is, the more chance this hoax has of being spread. If there would be a strong negative correlation this would mean that a hoax needs a complex language structure to have a higher spreading potential […]. With the results of the study it would be possible to make a limited formula to predict the success rate of a previously unknown hoax by scaling it on the researched criteria. This formula could then look like this: High originality + average simplicity + low danger + high benefit + high authority + average proselytism = high fitness.[1478]

The study found that quantitative research on selection criteria when focused on a subcategory of memes such as, in this case, the virus hoaxes, could be valid and reliable. Specifically, Chielens' research found that benefit and novelty had the highest positive correlations and appeared to be the most important criteria for the spreading power of this meme. Simplicity had the lowest correlation, which means that if the computer hoax is perceived as being very simple, it will not reach a high degree of spreading. Though far

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[1478] Ibid., accessed. p. 56–57.

more research is required to assess the applicability of Chielens' findings to other memes, his results, at least potentially, may have significance for educational processes and for the spread of information and knowledge.

We will look at other examples of memes in the following section. What is significant here from the perspective of learning processes is the importance of understanding that conventional norms, patterns, and authority structures are often influenced by popular memes, and it is important to identify and distinguish the beneficial and destructive elements of these memes on the learning environment and the sustainability of the ecosystem. Also, the processes by which memes are spread influence their social and cultural uptake in the public commons of the learning environment. In this sense, "learning to know" is the capacity to "see through" the habitual patterns of the mind and of the subtle ways in which advertisers, authorities, and even "educators" attempt to influence behaviour and knowledge by using those habitual patterns. This ability enhances learning and is likely a potent indicator of true educational attainment and autonomy.

14.3 Effects of popular culture and mass media on the mental environment

While it is quite obvious to most Western observers that the propaganda of a totalitarian regime like Stalin's Russia is inimical to true learning and education, no matter how effective its school system may be in transmitting basic literacy, math, and science skills, we are considerably less likely to recognize the impact of a consumer society on learning. Some analysts have noted that consumerism can create a closed, self-absorbed learning environment that may inhibit true learning almost as readily, though undoubtedly more subtly, than the heavy-handed arm of governments.

Elements of popular culture have become powerful memes that capture the public attention and may distort and pollute the learning environment of the public commons, inhibiting the learning of alternatives that do not fit dominant norms, and subtly determining social, economic, and political priorities without reference to evidence. According to Sheldon Ungar, Professor of Sociology at the University of Toronto at Scarborough, the public relentlessly dulls its collective mind with entertainment or, at best, "infotainment," and overwhelmingly favours an entertainment economy based on celebrity facts.[1479] Mark Kingwell of the University of Toronto argues that the "relentless and omnivorous presence" of popular culture tends to drive out other forms of knowledge as conversations are reduced to celebrity gossip, sports, and television trivia.[1480]

[1479] Ungar, Sheldon. "Knowledge, Ignorance and the Popular Culture: Climate Change Versus the Ozone Hole," *Public Understanding of Science*, vol. 9, 2000: 297-312. p. 302.
[1480] Kingwell, Mark. *Dreams of Millennium: Report from a Culture on the Brink*, Toronto: Viking, 1996.

The International Symposium on Culture Statistics, which met in Montreal in 2002, noted in the introduction to its proceedings that "lifestyles, values, traditions and beliefs are mostly embodied in films, television programs, recordings, printed matter and other cultural goods," and "it is mainly through these types of cultural goods that people learn about the rest of the world […] and their own culture."[1481] Children are especially vulnerable to the effects of media, as the American Academy of Pediatrics (AAP) warns:

> Because children have high levels of exposure, media have greater access and time to shape young people's attitudes and actions than do parents or teachers, replacing them as educators, role models, and the primary sources of information about the world and how one behaves in it.[1482]

The AAP and five other public health organizations produced a joint statement in 2000 that observed, in part:

> Television, movies, music, and interactive games are powerful learning tools, and highly influential media. The average American child spends as much as 28 hours a week watching television, and typically at least an hour a day playing video games or surfing the Internet. Several more hours each week are spent watching movies and videos, and listening to music. These media can, and often are, used to instruct, encourage, and even inspire. But when these entertainment media showcase violence—and particularly in a context which glamorizes or trivializes it—the lessons learned can be destructive.[1483]

According to Australian Richard Eckersley, the mass media, a product of "scientific and technological virtuosity," is one of the main sources of cultural malaise. He notes:

> The media have become the most-powerful determinants of our culture, yet we make little attempt to control or direct the media in our best long-term interests. Indeed, the style of public culture dictated by the popular media virtually guarantees that we will fail to address effectively the many serious problems we have.[1484]

Eckersley goes on to argue that the media:

[1481] Bernier, Serge, and Denise Lievesley. "Proceedings of the International Symposium on Culture Statistics." October 21-23, 2002, UNESCO Institute for Statistics and Observatoire de la culture et des communications du Quebec, Institut de la Statistique du Quebec. p. 1.

[1482] American Academy of Pediatrics (AAP). "Media Violence," *Pediatrics*, vol. 108, no. 5, 2001: 1222-1226. p. 1222.

[1483] American Academy of Pediatrics, American Psychological Association, American Medical Association, American Academy of Child and Adolescent Psychiatry, American Academy of Family Physicians, and American Psychiatric Association. *Joint Statement on the Impact of Entertainment Violence on Children. Congressional Public Health Summit*, American Academy of Pediatrics, July 26, 2000; accessed October 2006; available from http://www.aap.org/advocacy/releases/jstmtevc.htm.

[1484] Eckersley. "The West's Deepening Cultural Crisis." p. 3.

- divide rather than unite us, fashioning public debate into a battle waged between extremes—a delineation of conflict rather than a search for consensus.
- heighten our anxieties and intimidate us by depicting the world outside our personal experience as one of turmoil, exploitation, and violence.
- debase our values and fuel our dissatisfaction by promoting a superficial, materialistic, self-centered, and self-indulgent lifestyle—a way of life that is beyond the reach of a growing number of citizens.
- erode our sense of self-worth and promote a sense of inadequacy by constantly confronting us with images of lives more powerful, more beautiful, more successful, more exciting.[1485]

Jonathan Rowe notes that just as there has been a debate over the limits to economic growth in the material environment, a debate is appearing over the limits to our psychological and physical capacity to "fulfill our assigned roles as consumers."[1486] Kalle Lasn observes that not so long ago we thought that toxins generated by industry were within acceptable limits, until we found out otherwise. In the same way, we do not presently know how the mediated environment is affecting us, although there are signs of increasing mental and physical disorders in the population, and we can already intuitively feel the effects.[1487]

Lasn lists a number of "mental pollutants and information viruses" that threaten our "ecology of mind" as we deal with these pollutants on a daily basis.[1488] For example, noise, or unwanted sound in the public commons, especially that created by technology, can create stress and inhibit learning. Other "pollutants" that Lasn considers are effects of mass media, and especially television, such as: the effects of "technical events" or jolts in television editing; shock or the effects of television violence; the effects of omnipresent advertising; the effects of unreality, or of living in virtual realities, and the erosion of empathy. In addition, he believes that the quality of information in the learning environment is affected by a loss of infodiversity, by misinformation or "infotoxins," and by information overload. Recognizing that these factors can all inhibit constructive learning and create an unfavourable learning context and environment, we will look briefly at some of these "mental pollutants" below and in the next chapter.

Mental pollutants provide vital information on key conditions and determinants of learning. If it can be demonstrated, for example, that each of the pollutants in Lasn's list has a documented relationship to poor or adverse learning outcomes, then it is reasonable to associate a decline in noise, jolts, information overload and other factors with an

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[1485] Ibid. p. 3.
[1486] Rowe, Jonathan. "Carpe Callosum: Welcome to the New New Economy - Where the Currency Is a Mindshare, the Bottom Line Is Need, and the Index Is Always Rising," *Adbusters Magazine*, vol. 9, no. 6, 2001: 57-65. p. 61.
[1487] Lasn. *Culture Jam: How to Reverse America's Suicidal Consumer Binge - and Why We Must*.
[1488] Ibid.

improved learning context, and to interpret such a decline as genuine progress towards a more educated populace. This should eventually be possible, as Lasn is interested in actually quantifying the risks and consequences of mental pollution on the learning environment. For example, he recommends:

> We could compare living in Los Angeles with living in Portland, or growing up in North America with growing up in Australia. We could create a "livability" index more accurate than the ones that simply measure greenspace, minimum wage and the number of schools. With reliable mental-environment indexes, we could rate TV programs and stations by how many jolts per hour they manufacture, how much clutter they dump into the public mind and how this may be affecting our mental health. We could then set new agendas: to reduce, not increase, the number of jolts our brains absorb.[1489]

Lasn's objectives here clearly have the potential to open new frontiers in learning that go far beyond the conventional education systems that currently predominate. Indeed, it can even be argued that, without the type of indicators towards which Lasn points, our current indicators actually send misleading messages on educational attainment. For this reason—even though we are far from populating and implementing all of Lasn's indicators—it is worth at least examining his concepts in more detail here to demonstrate potential future directions in this sphere.

14.3.1 Effects of television viewing

We know the public spends a great deal of time both watching television and participating in other virtual environments. Newly released data from Statistics Canada's *2003 Television Viewing Survey* found that the average hours Canadians over the age of two watch television have remained steady at about 22 hours per week (or more than three hours per day) from 1999–2003. However, there is evidence that seniors are increasing their viewing while young adults, teens, and children are spending less time in front of the television, but more time in front of computers and other digitalized platforms such as those used for video games.[1490]

In addition, Canadians spend much of their viewing time watching "foreign programs," and although Statistics Canada did not define this category further, there is evidence that the majority of the foreign programs watched originate in the U.S.[1491] For example, the

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[1489] Ibid., p. 17.
[1490] Statistics Canada. "Television Viewing." *The Daily*, Statistics Canada, Catalogue no. 87F0006XIE, March 31, 2005, accessed April 2005; available from http://www.statcan.ca/Daily/English/050331/d050331b.htm.
[1491] Canadian Press. *Few Canadians Watching Home-Grown Television*, CTV.ca, October 2, 2006; accessed October 2006; available from http://www.ctv.ca/servlet/ArticleNews/story/CTVNews/20061002/canadians_television_061002/20061002?hub=Entertainment.

Canadian Press reported in October 2006 that only one Canadian-made program was in the Top 30 for the week of September 18 to September 24, 2006. That was "CTV News," and the rest of the list was dominated by U.S. shows such as "House," "CSI," and "Desperate Housewives."[1492] Paquette and deGuise of Laval University have found that over 80% of the television violence shown in Canada originates in the U.S.[1493]

According to Statistics Canada, the most watched programming in Canada falls into the "drama and comedy" category, with this category taking up 37.3% of viewing time. In this category, 82% of viewing time is spent watching "foreign programs," most likely those from the U.S. The second most popular type of programming watched in Canada is that of "news and public affairs," which take 24.4% of viewing time. In this category, Canadians prefer Canadian news to foreign news—75% of news viewing time is spent watching Canadian news programs.[1494]

Critics have noted that television effects on children can be especially detrimental. A report on the effects of television on children, entitled "Tuned in and Switched Off," cites several studies of importance, which relate television viewing to learning. Included are:

- A study from Yale University [that] found that frequent television viewers have shortened attention spans and impaired thinking skills.
- A study from Harvard [that] showed that children learning from television had poorer logical thinking than those who learned mainly from books.[1495]

Other studies have shown that television contributes to failure in school and to children no longer knowing how to play. Joyce Nelson, the author of the above mentioned report, comments: "They know how to imitate scenes they see on TV, but not how to generate their own imaginative games […]. It is the erosion—or elimination—of the imagination that is perhaps the most worrying aspect of TV's hidden curriculum."[1496]

Real Vision presents the following statistics, based on U.S. data:[1497]

- Hours of TV watching per week shown to negatively affect academic achievement: 10 or more.[1498] In other words, studies have found that children who

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[1492] Ibid., accessed.

[1493] Paquette, Guy, and Jacques deGuise. *Principaux Indicateurs de la Violence Présentée sur les Réseaux Généralistes de Télévision au Canada, de 1993 à 2001*, Centre d'études sur les médias de l'Université Laval, 2002. cited in Media Awareness Network. *Violence in Media Entertainment*, 2006; accessed October 2006; available from http://www.media-awareness.ca/english/issues/violence/violence_entertainment.cfm.

[1494] Statistics Canada. "Television Viewing."

[1495] Nelson, Joyce. "Tuned in and Switched Off," *New Internationalist*, vol. 180, no. February, 1988.

[1496] Ibid. p. 1

[1497] Real Vision. *Facts and Figures About Our TV Habit*, TV Turnoff Network, 2006; accessed October 2006; available from http://www.tvturnoff.org/images/facts&figs/factsheets/FactsFigs.pdf.

[1498] U.S. Department of Education. *Strong Families, Strong Schools, Building Community Partnerships for Learning*, 1994.

watch more than 10 hours of TV weekly fare worse academically than those who watch less.[1499]

- Hours per year the average American youth spends in school: 900[1500]
- Hours per year the average American youth watches television: 1,023—about double the amount shown to have adverse effects on academic achievement
- American children spend four times as many hours watching TV as reading for pleasure[1501]
- Students who read for pleasure every day score almost 10% higher on proficiency tests than those who never read for fun[1502]
- In 1998, 52 percent of 12th-graders who watched an hour or less of TV a day achieved reading proficiency, whereas only 14 percent of those watching more than six hours per day did. Only 27 percent of 12th-graders who watched four to five hours read proficiently.[1503]

If we are to develop true indicators of learning, then it is essential to acknowledge the powerful role of television in affecting learned behaviour, including its effects on academic achievement, and to assess the *type* and *quality* of learning transmitted through this medium. The evidence noted above indicates that television viewing should not only be considered a key indicator of informal learning, but that its impact in affecting academic achievement and reading proficiency extends to the sphere of formal education as well. In short, no set of learning and education indicators can be considered complete without including the role and impact of television.

14.3.2 *"Jolts": technical events on television*

Lasn notes that a noise is a jolt, but a jolt on television can also be anything that abruptly "interrupts the flow of sound or thought or imagery."[1504] It is a stimulus change that releases hormones that trigger the fight-or-flight response. In broadcasting this is called a "technical event," which holds the viewers' attention, or keeps them in the fight-or-flight mode. It can be a shift in camera angle, a gunshot, or a cut to a commercial, for example.

Ross McDonald of the University of Auckland in New Zealand notes that television relies on speed and sensation.[1505] In 1978, technical events in regular television programming

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[1499] U.S. National Center for Education Statistics. *Nation's Report Card*, 1990.

[1500] Barber, Benjamin. "America Skips School," *Harper's Magazine*, vol. 287, no. 1722, 1993: 39-46.

[1501] Kaiser Family Foundation. *Kids and the Media @ the New Millenium*, 1999.

[1502] U.S. National Center for Education Statistics. *Fourth-Grade Reading*, 2000.

[1503] U.S. National Center for Education Statistics. *NAEP [National Assessment of Educational Progress] 1998 Reading Report Card for the Nation and the States*, 1999. cited in Real Vision. *Warning: Too Much TV Is Hazardous to Your Health*, TV Turnoff Network, 2006; accessed October 2006; available from http://www.tvturnoff.org/images/facts&figs/factsheets/Hazardous.pdf.

[1504] Lasn. *Culture Jam: How to Reverse America's Suicidal Consumer Binge - and Why We Must*. p. 15.

[1505] McDonald. "Television, Materialism and Culture: An Exploration of Imported Media and Its Implications for GNH [Gross National Happiness]."

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averaged ten events per minute and commercials averaged twenty events per minute. By 1998 these events had more than doubled. MTV, which is mainly watched by youth, now has more than 60 events per minute, which produces a jolt every second.[1506] In addition, commercials cut into the programming at frequent intervals.[1507] The result is that, as the attention span is more and more fragmented, disconnected, and chaotic, it becomes increasingly difficult to concentrate and think, which interferes with learning capacity.

For example, Aidan Moran describes concentration as "attentional control," which, in turn, is necessary for learning to occur.[1508] Studies such as that done by C. E. Koolstra and T. Van der Voort show that television viewing in youth decreases levels of concentration and reduces reading. Using a sample of 1,050 Dutch schoolchildren, Koolstra and Van Der Voort found "that two causal mechanisms underlie television's reductive effect on children's reading: a television-induced deterioration of attitudes toward book reading and a television-induced deterioration of children's ability to concentrate on reading."[1509]

In addition, Dimitri Christakis, et al. at the University of Washington in Seattle conducted what they suggest is "the first study to test the hypothesis of very early television viewing on subsequent inattention using a nationally representative longitudinal sample."[1510] They used the U.S. *National Longitudinal Survey of Youth* as the source of their data, and the hyperactivity subscale of the Behavioral Problems Index (BPI) for the main outcome. And they also controlled for many co-variates such as measures of cognitive stimulation and emotional support in the home, mother's educational status, and socioeconomic status. Attention problem status as listed in the BPI includes whether the child has difficulty concentrating, is easily confused, is impulsive, has trouble with obsessions, or is restless—all of which are consistent with Attention Deficit Hyperactivity Disorder (ADHD) diagnosis. The main predictor variable was the number of hours of television watched per day.

One-year old children (1,278 children in the survey) watched television for an average of 2.2 hours (Mean / SD [standard deviation]: 2.91) per day, and three-year old children (1,345 children in the survey) watched for an average of 3.6 hours (Mean / SD: 2.94) per day. The results showed that at age seven, 10% of the children who were ages one and

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[1506] Lasn. *Culture Jam: How to Reverse America's Suicidal Consumer Binge - and Why We Must*. p. 16.

[1507] Summerfield, Patti. *MindShare: Clutter on the Rise on US TV; Canucks Won't Stand for It*, Media in Canada, June 1, 2006; accessed October 2006; available from http://www.mediaincanada.com/articles/mic/20060601/mindshare.html.

[1508] Moran, Aidan P. *The Psychology of Concentration in Sport Performers*, Hove: Psychology Press, 1996. cited in Stock, Mike. *The Nature of Concentration*, Mental Skills: Applied Sport Psychology Online, n.d.; accessed October 2006; available from http://www.mentalskills.co.uk/popups/print.php?docid=3.

[1509] Koolstra, C. E., and T. Van der Voort. "Longitudinal Effects of Television on Children's Leisure Time Reading: A Test of Three Explanatory Models," *Human Communication Research*, vol. 23, no. 1, 1996: 4-35. p. 4.

[1510] Christakis, Dimitri, Frederick J. Zimmerman, David L. DiGuiseppe, and Carolyn A. McCarty. "Early Television Exposure and Subsequent Attentional Problems in Children," *Pediatrics*, vol. 113, no. 4, 2004: 708-713. p. 710.

three in the initial survey had attentional characteristics that are associated with ADHD problems. This correlates with the 10% proportion of children in the general population who are estimated to have ADHD.[1511] As well, the authors note:

> A 1-SD [Mean] increase in the number of hours of television watched at age 1 is associated with a 28% increase in the probability of having attentional problems at age [seven]. This result is robust and stable over time—a similar effect size is obtained for the number of hours of television watched at age [three]."[1512]

14.3.3 Effects of violence on television

While noise and jolts have been demonstrated to have adverse impacts on what Delors labels "learning to know" and "learning to be," television violence has been shown to have a negative impact on "learning to live together," as reflected in fearful and aggressive behaviours in both children and adults.

Sissela Bok of the Harvard Center for Population and Development Studies writes in a U.S. Department of Justice report:

> [U]ntil our time, it has never been possible for viewers to tune in for the enjoyment of violent programming in their own homes at all hours of the day and night; nor in the past have up-close graphic scenes of violence, often sexual in nature, become part of the experience of viewers of all ages and been marketed so relentlessly to young people […]. Neither children nor adults take to such enjoyment without being taught new perspectives, new ways of perceiving violence, whether by the media or in their communities […]. For today's children in particular the screen has become the lens through which they learn about violence.[1513]

The American Academy of Pediatrics (AAP) argues that the context of the violence portrayed can "make the difference between learning about violence and learning to be violent."[1514] They continue:

[1511] Ibid. p. 711. The authors note: "We created a binary classification representing attentional problems as either present or absent, using a cut point of 120 on the same-gender standardized BPI subscale score. That is, children with scores >1.2 standard deviations (SDs) above the mean were classified as having attentional problems. Although this cannot be viewed to be equivalent to a diagnosis of ADHD, the endorsed symptoms on the subscale […] are similar to symptoms that are consistent with a diagnosis of ADHD. We chose this cutoff in part because it yielded a prevalence for attentional problems that was similar to published reports of ADHD prevalence among similar-aged children in community samples." p. 708.

[1512] Ibid. p. 710.

[1513] Bok, Sissela. "Violence, Free Speech, and the Media," in *Perspectives on Crime and Justice: 1998– 1999 Lecture Series*, ed. Kleiman, Mark A.R., Felton Earls, Sissela Bok and James B. Jacobs, 51-72. Washington, D.C.: National Institute of Justice, 1999, accessed October 2006; available from http://www.ncjrs.gov/pdffiles1/nij/178244.pdf. p. 53–54.

[1514] American Academy of Pediatrics (AAP). "Media Violence." p. 1223.

Serious explorations of violence in plays like *Macbeth* and films like *Saving Private Ryan* treat violence as what it is—a human behavior that causes suffering, loss, and sadness to victims and perpetrators. In this context, viewers learn the danger and harm of violence by vicariously experiencing its outcomes. Unfortunately, most entertainment violence is used for immediate visceral thrills without portraying any human cost.[1515]

The Ottawa-based Media Awareness Network cites the work of the Washington, D.C. Center for Media and Public Affairs, which finds that over half of television violence is committed by the "good guys," is seen as a means of problem solving, and is not contextualized to explore its human consequences.[1516]

In 1985, David Pearl, writing for the U.S. National Institute for Mental Health (NIMH), referenced a 1982 NIMH report that demonstrated that television has four effects on violent behaviour:

1. direct imitation of observed violence
2. 'triggering' of violence that otherwise might be inhibited
3. desensitization to the occurrence of violence
4. viewer fearfulness[1517]

These effects are all learned behavioural outcomes, for both children and adults, of the informal learning that occurs as a result of being exposed repeatedly to violence on television.

Evidence of the effects of television violence on children and young adults

Research into the effects of television violence has been ongoing for at least two decades, and has mostly focused on the effects of violent content in television programming on the expression of aggression in children.[1518] A recent report in *Pediatrics* observed that television news, which relies on sensational presentations of violence and is watched at least several times a week by children and adolescents, exposes children of all ages to "highly distressing and violent accounts of murders, catastrophic accidents, war, and

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[1515] Ibid. p. 1223.

[1516] Center for Media and Public Affairs. cited in Media Awareness Network. *Violence in Media Entertainment*, accessed.

[1517] Pearl, David. cited in Fore, William F. "Media Violence: Hazardous to Our Health." *The Christian Century*, Religion Online, September, 1985, accessed October 2006; available from http://www.religion-online.org/showarticle.asp?title=1913.

[1518] Healthy Minds.org. *Psychiatric Effects of Media Violence*, American Psychiatric Association, 2006; accessed October 2006; available from http://healthyminds.org/mediaviolence.cfm.

other suffering."[1519] It suggests that effects on children include "heightened levels of aggression, immediate fright reactions, fear of the world as a scary place, and desensitization, particularly in older school-aged children, who are able to distinguish the real from the unreal on television."[1520]

American Academy of Pediatrics president, Donald E. Cook, reports:

> Since the l950s, more than 3,500 research studies in the United States and around the world using many investigative methods have examined whether there is an association between exposure to media violence and subsequent violent behavior. All but 18 have shown a positive correlation between media exposure and violent behavior.[1521]

Anderson and Bushman report in *Science* that six major public health organizations in the United States, including the American Academy of Pediatrics, the American Medical Association, and the American Academy of Child and Adolescent Psychiatry, recently concluded that "the data point overwhelmingly to a causal connection between media violence and aggressive behavior in some children."[1522] The AAP cites Bushman and Huesmann as reporting that the effects of media violence, including impacts of violent video games, on aggression, show a correlation that is far from trivial:

> The strength of the correlation between media violence and aggressive behavior found on meta-analysis is greater than that that of calcium intake and bone mass, lead ingestion and lower IQ, condom nonuse and sexually acquired human immunodeficiency virus infection, or environmental tobacco smoke and lung cancer—associations clinicians accept and on which preventive medicine is based without question.[1523]

Between 1995 and 1997, the Center for Communication and Social Policy at the University of California, Santa Barbara (UCSB), along with three other research

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[1519] Walma van der Molen, Juliette H. "Violence and Suffering in Television News: Toward a Broader Conception of Harmful Television Content for Children," *Pediatrics*, vol. 113, no. June, 2004: 1771 - 1775. p. 1771.

[1520] Ibid. p. 1772.

[1521] Cook, Donald E. *Testimony of the American Academy of Pediatrics on Media Violence before the U.S. Senate Commerce Committee*, American Academy of Pediatrics, September 13, 2000; accessed December 2005; available from http://www.aap.org/advocacy/releases/medvioltest.htm. p. 1.

[1522] American Academy of Pediatrics, American Psychological Association, American Medical Association, American Academy of Child and Adolescent Psychiatry, American Academy of Family Physicians, and American Psychiatric Association. *Joint Statement on the Impact of Entertainment Violence on Children. Congressional Public Health Summit*, accessed. cited in Anderson, Craig A., and Brad J. Bushman. "The Effects of Media Violence on Society," *Science*, vol. 295, no. 5564, 2002: 2377 - 2379. p. 2377.

[1523] Bushman, Brad J., and L. Rowell Huesmann. "Effects of Televised Violence on Aggression," in *Handbook of Children and the Media*, ed. Singer, D. and J.L. Singer, 223–254. Thousand Oaks, CA: Sage Publications, 2001. cited in American Academy of Pediatrics (AAP). "Media Violence." p. 1223.

institutes, coordinated the *National Television Violence Study*.[1524] The study was "the largest and most representative sample of television content ever evaluated in a single study," involved more than 6,000 hours of broadcast programming, and focused on the key features of "violent portrayals that either increase or diminish the risk of harmful effects on viewers, especially children."[1525] According to Dale Kunkel, associate professor of communication at UCSB: "These patterns teach children that violence is desirable, necessary, and painless."[1526] This is a clear example of learning based on misinformation. The specific patterns the study found, which "increase the risk that children who watch will learn aggressive attitudes and behaviors,"[1527] included the following:

- *a perpetrator who is attractive*—"Forty percent of the violent incidents on television are initiated by 'good' characters who are likely to be perceived as attractive role models."
- *violence that seems justified*—"The long-term negative consequences of violence are portrayed in only 15% of programs."
- *violence that goes unpunished*—"Nearly three-quarters of violent scenes contain no remorse, criticism, or penalty for violence, and 'bad' characters go unpunished in 40% of programs."
- *minimal consequences to the victim*
- *violence that seems realistic to the viewer*[1528]

U.S. researchers Jeffery G. Johnson and colleagues conducted one of the more important longitudinal studies of television viewing and aggressive behaviour during adolescence and adulthood.[1529] Over a 17-year period between 1975 and 1993, they assessed a sample of 707 randomly-chosen individuals from two counties in northern New York State, whom they interviewed four times. In 2000, the individuals were interviewed a fifth time and given a questionnaire that assessed a wide range of aggressive acts, and data were also obtained for government arrest records. The study statistically controlled for other key childhood factors known to affect aggression, including childhood neglect, family income, neighbourhood violence, parental education, and psychiatric disorders, which allowed investigators to rule out alternative explanations.

[1524] Center for Communication and Social Policy, University of California, Santa Barbara. *National Television Violence Study Year Three: 1996-97*, Report announcement reproduced by Media Awareness Network, 1998; accessed October 2006; available from http://www.media-awareness.ca/english/resources/research_documents/reports/violence/upload/National-Television-Violence-Study-Year-Three-1996-97-Report-pdf.pdf.

[1525] Ibid., accessed. p. 1.

[1526] Kunkel, Dale. quoted in Ibid., accessed. p. 1.

[1527] Ibid., accessed. p. 1.

[1528] Ibid., accessed. p. 2.

[1529] Johnson, Jeffrey G., Patricia Cohen, Elizabeth M. Smailes, Stephanie Kasen, and Judith S. Brook. "Television Viewing and Aggressive Behavior During Adolescence and Adulthood," *Science*, vol. 295, no. March 29, 2002: 2468-2471.

Results indicated: "There was a significant association between the amount of time spent watching television during adolescence and early adulthood and the likelihood of subsequent aggressive acts against others."[1530] Aggressive acts included assault or physical fights resulting in injury, robbery, threats to injure someone, or use of a weapon to commit a crime. Specifically the results showed:

Adolescents at mean age 14:

- of those males/ females who watched less than one hour of television a day, 8.9% of the total males sampled, and 2.3% of total females sampled committed 'any aggressive act against another person' at mean age 16 or 22
- of those males/ females who watched one–three hours of television a day, 32.5% of the total males sampled, and 11.8% of total females sampled committed 'any aggressive act against another person' at mean age 16 or 22
- of those males/ females who watched over three hours of television a day, 45.2% of the total males sampled, and 12.7% of total females sampled committed 'any aggressive act against another person' at mean age 16 or 22

Associations in the female sub-sample of this age group were not statistically significant, so the results for females above should be treated with caution.

Young adults at mean age 22:

- of those males/ females who watched less than one hour of television a day, 14.6% of the total males sampled, and 0% of total females sampled committed 'any aggressive act against another person' at mean age 30;
- of those males/ females who watched one—three hours of television a day, 14.0% of the total males sampled, and 3.9% of total females sampled committed 'any aggressive act against another person' at mean age 30; and
- of those males/ females who watched over three hours of television a day, 18.8% of the total males sampled, and 16.8% of total females sampled committed 'any aggressive act against another person' at mean age 30.[1531]

No association was found between television viewing and property crimes, including arson, vandalism, or theft in either age group.

In Canada, television viewing by youth is declining. Statistics Canada reports that in the fall of 2004, youth aged 12 to 17 watched television for 12.9 hours a week (1.84 hours per day), which is two hours less than in 2003 (2.13 hours per day), and almost three hours less than in 2001 (2.27 hours per day). It attributes this drop, in part, to use of the Internet, noting: "According to the survey data on household spending, Internet use in households with children under 18 has risen substantially, from 50% in 1999 to 82%

[1530] Ibid.
[1531] Ibid. pp. 2469–2470.

in 2004."[1532]

Violence in the media is increasing

According to the AAP, over 60% of regular television programming contains violence.[1533] Lasn suggests that the average North American sees at least five acts of violence per hour of prime time network television watched, such as killings, gunshots, assaults, car chases, and rapes.[1534] This is a statistic provided to him George Gerbner, former dean emeritus of the Annenberg School of Communication in Philadelphia. The TV Turnoff Network lists a number of facts and figures about television violence in U.S. programming, which is also shown in Canada, including the following:

- Number of violent acts the average American child sees on TV by age 18: 200,000[1535, 1536]
- Number of murders witnessed by children on television by the age 18: 16,000[1537]
- Percentage of youth violence directly attributable to TV viewing: 10%[1538]
- Percent increase in network news coverage of homicides between 1993 and 1996: 721%[1539, 1540]

More recent statistics show television violence and video game playing, which contains very violent content, to be increasing. For example, the Media Awareness Network, referring to the gladiator culture of ancient Rome, notes that violence has always played a role in entertainment.[1541] However, it believes that media violence has increased, at least since 1993. It cites a study by Laval University professors Guy Paquette and Jacques deGuise who examined six major Canadian television networks (French-language networks SRC, TVA, and TQS, and English-language networks CBC, CTV, and Global) between 1993 and 2001 (with the exception of children's cartoon programming), and

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[1532] Statistics Canada. "Television Viewing." *The Daily*, Statistics Canada, March 31, 2006, accessed January 2007; available from http://www.statcan.ca/Daily/English/060331/d060331b.htm.

[1533] American Academy of Pediatrics, American Psychological Association, American Medical Association, American Academy of Child and Adolescent Psychiatry, American Academy of Family Physicians, and American Psychiatric Association. *Joint Statement on the Impact of Entertainment Violence on Children. Congressional Public Health Summit*, accessed.

[1534] Lasn. *Culture Jam: How to Reverse America's Suicidal Consumer Binge - and Why We Must*. p. 17.

[1535] The following 4 footnotes are cited in Real Vision. *Facts and Figures About Our TV Habit*, accessed.

[1536] Majority Staff of the Senate Committee on the Judiciary. *Children, Violence, and the Media. A Report for Parents and Policy Makers*, Washington, D.C., U.S. Senate Committee on the Judiciary, 1999; accessed March 2006; available from http://judiciary.senate.gov/oldsite/mediavio.htm.

[1537] American Medical Association. *Physician Guide to Media Violence*, 1996.

[1538] Majority Staff of the Senate Committee on the Judiciary. *Children, Violence, and the Media. A Report for Parents and Policy Makers*, accessed.

[1539] Budd, Craig, and Steinman. *Consuming Environments*, Rutgers University Press, 1999.

[1540] Real Vision. *Facts and Figures About Our TV Habit*, accessed.

[1541] Media Awareness Network. *Violence in Media Entertainment*, accessed.

found the incidence of physical violence had increased by 183% on the three anglophone networks and by 540% on the francophone networks.[1542]

However, one francophone network, TQS, accounted for 49% of all the physical violence in the francophone networks studied. The authors speculate that the francophone networks have such high numbers since they air more movies than do the anglophone networks, and movies generally have higher violence profiles than do television shows. They also note that the francophone networks show more movies in order to fill airtime that cannot be filled with their own programs due to a lack of sufficient funding.

Paquette and deGuise also found that private networks in Canada air three times as many violent acts as do public networks. In addition, most violence is broadcast when children are likely to be watching—87.9% of all violent acts appear before 9 p.m., and 39% are shown before 8 p.m.[1543]

The Media Awareness Network believes that violence, in addition to increasing on television programming, has also become more graphic, sexual, and sadistic, and is now a major feature of video games and popular music.[1544] The AAP argues that video games are "an ideal environment in which to learn violence. They place the player in the role of the aggressor and reward him or her for successful violent behavior."[1545] Citing a U.S. Senate Committee on Commerce, Science, and Transportation hearing, the AAP continues: "Playing violent video games has been found to account for a 13% to 22% increase in adolescents' violent behavior; by comparison, smoking tobacco accounts for 14% of the increase in lung cancer."[1546]

Researchers have also looked at communities before and after the introduction of television and have found a link between media violence and aggressive behaviour.[1547] For example, Freedman notes that in the 1970s, two years after television was introduced into a remote village in British Columbia, violent behaviour in the population increased

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[1542] Paquette, and deGuise. *Principaux Indicateurs de la Violence Présentée sur les Réseaux Généralistes de Télévision au Canada, de 1993 à 2001.* cited in Media Awareness Network. *Violence in Media Entertainment*, accessed.

[1543] Paquette, and deGuise. *Principaux Indicateurs de la Violence Présentée sur les Réseaux Généralistes de Télévision au Canada, de 1993 à 2001.* cited in Media Awareness Network. *Violence in Media Entertainment*, accessed.

[1544] Media Awareness Network. *Violence in Media Entertainment*, accessed.

[1545] American Academy of Pediatrics (AAP). "Media Violence." p. 1223.

[1546] U.S. Senate Committee on Commerce, Science, and Transportation. *The Impact of Interactive Violence on Children Hearing*, 106th Cong, 1st Session, (statement of Craig Anderson, Professor, Iowa State University, Department of Psychology), 2000. cited in American Academy of Pediatrics (AAP). "Media Violence." p. 1223.

[1547] Freedman, Jonathan L. *Research on the Effects of Media Violence*, Media Awareness Network, 2006; accessed October 2006; available from http://www.media-awareness.ca/english/issues/violence/effects_media_violence.cfm?RenderForPrint=1.

by 160%.[1548] Of course, this statistic does not prove that television caused the violence, but it does show that the correlation between television and violent behaviour is strong.

Despite the strength of the evidence noted above, the important social outcomes of this aspect of informal learning, and the direct relevance and negative correlation of this indicator for wellbeing, there is currently no systematic, official, national monitoring of trends in media and video game violence. Such monitoring is essential to provide a robust indicator of media violence as a key aspect of informal learning and an educated populace. In the absence of such reliable and consistent national data over time, we have had to rely on academic research and reporting from media watchdog associations for this information.

Influences of television violence on the cultural environment of communities

Despite the focus of most research on the relationship between media violence and aggressive individual behaviour, George Gerbner, who has conducted the longest running study of television violence, suggests that the "argument over whether television violence causes real violence misses the point."[1549] Instead, he argues that its effect on the cultural environment of communities is even more important. Gerbner is not in favour of censorship, but he questions whose rights are protected when governments give a "virtual commercial monopoly over the public's airwaves […] delivering our cultural environment to a marketing operation."[1550] The Media Awareness Network proposes:

> The repercussions aren't limited to a potential increase in aggressive behaviour. Many commentators worry that media violence has become embedded in the cultural environment; that, in some sense, it's part of the 'psychic air' that children and young people constantly breathe. That environment of violence, profanity, crudeness, and meanness may erode civility in society by demeaning and displacing positive social values.[1551]

According to Sissela Bok, writing for the U.S. National Institute of Justice, evidence of the effects of television violence on the population indicates that exposure to television violence increases feelings of fear, and a sense that the world is menacing, inhospitable, and untrustworthy, and that news coverage in particular plays a strong role in viewers

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[1548] Ibid., accessed.

[1549] Gerbner, George. "Reclaiming Our Cultural Mythology: Television's Global Marketing Strategy Creates a Damaging and Alienated Window on the World," *In Context: A Quarterly of Humane Sustainable Culture*, no. Spring, 1994, The Context Institute; accessed October 2006; available from http://www.context.org/ICLIB/IC38/Gerbner.htm.

[1550] Gerbner, George. cited in Media Awareness Network. *Media Violence Debates*, 2006; accessed October 2006; available from http://www.media-awareness.ca/english/issues/violence/violence_debates.cfm.

[1551] Ibid., accessed.

learning such attitudes:[1552]

> Studies show that the sense that threats abound in the outside world is common among TV viewers of all ages who watch a lot of television. Media expert George Gerbner describes this effect as the 'mean world' syndrome. He and his colleagues have found that viewers who watch television more than 3 hours a day are more likely than viewers exposed to 2 hours or less to feel at high risk of victimization from violence, to perceive their neighborhoods as unsafe, and to regard the world as 'mean and gloomy.'[1553]

Bok also comments that "this skewing of perspectives" has social outcomes that have effects on public attitudes toward crime and violence:

> Given the stress on such coverage in local news reports, questions affecting policy choices of great importance for communities and the Nation inevitably receive correspondingly short shrift. The media's disproportionate emphasis on violence and mayhem contributes to skewing the perspective of unsuspecting viewers. And their skewed perspective may in turn lead to faulty reasoning and deliberation about choices in their own lives and in their communities, as well as in their views about collective policymaking with respect to crime and justice. Many are influenced by such a perspective to entertain views on prevention and punishment and on the severity of punishment criminals deserve, views that are not fully thought through in light of existing evidence.[1554]

Bok's comment again points to the notion that learning based on misinformation can lead to poor judgements that adversely affect wellbeing. These findings are significant from the perspective of our recommended educated populace framework, as they relate informal learning outcomes directly to social outcomes.

In their research, Gerbner and his colleagues have found that television creates a "mean and violent world" in the minds of many viewers, and especially heavy viewers:

> Most heavy viewers in every education, age, income, sex, newspaper reading and neighborhood category express a greater sense of insecurity and apprehension than do light viewers […]. Fearful people are most dependent, more easily manipulated and controlled […]. They may accept and even welcome repression if it promises to relieve their insecurities. That is the deeper problem of violence-laden television.[1555]

[1552] Bok. "Violence, Free Speech, and the Media."

[1553] Ibid. p. 60. citing Gerbner, George. "The Politics of Media Violence: Some Reflections," in *Mass Communication Research: On Problems and Policies*, ed. Hamelink, Cees and Olga Linne, Ch. 9. Norwood, New Jersey: Ablex, 1993.

[1554] Bok. "Violence, Free Speech, and the Media." p. 61.

[1555] Gerbner, George, Michael Morgan, L. Gross, and N. Signorielli. *Gratuitous Violence and Exploitative Sex: What Are the Lessons?*, Report for the Study Committee of the Communications Commission of the

In a 2006 report for the Media Awareness Network, which briefly reviews television violence research, Jonathan Freedman finds: "People who watch a lot of media violence tend to believe that the world is more dangerous than it is in reality."[1556] Discussing what Gerbner calls the "Mean World Syndrome," he notes:

> Gerbner's research found that those who watch greater amounts of television are more likely to:
> - overestimate their risk of being victimized by crime,
> - believe their neighbourhoods are unsafe,
> - believe "fear of crime is a very serious personal problem,"
> - assume the crime rate is increasing, even when it is not.[1557]

In the early 1990's, André Gosselin, Jacques deGuise, Guy Paquette, and Benoît Laplante of Laval University applied Gerbner's research into the cognitive effects of television violence to the Canadian context.[1558] They designed a 200-item questionnaire using variables, indices, and questionnaire items similar to those used in Gerbner's previous studies, and adapted them to the Canadian context. The questionnaire included over 150 items related to a wide range of representations, beliefs, and attitudes related to real or fictional violence.[1559] They found that one of these indicators—*perception of danger*—was actually made up of two different dimensions, and that both could be measured with some reliability: a cognitive aspect that refers to the beliefs an individual has about the level of danger in the surrounding world, and an emotional factor that can be interpreted as a measure of how much an individual fears the surrounding world.

In 1993, André Gosselin, et al. used the questionnaire to survey 360 university students from Laval University, noting that they represented a special population who:

> … should be more aware of the conditions of television programming as well as of the mechanisms of its reception by viewers and, for this reason, more immune

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National Council of Churches Hearing, New York, September, 1984. pp. 5–6, cited in Fore. "Media Violence: Hazardous to Our Health."

[1556] Freedman. *Research on the Effects of Media Violence*, accessed.

[1557] Ibid., accessed.

[1558] Gosselin, André, Jacques deGuise, Guy Paquette, and Benoît Laplante. "Violence on Canadian Television and Some of Its Cognitive Effects," *Canadian Journal of Communication*, vol. 22, no. 2, 1997.

[1559] These factors included pessimism and social demoralization; distrust; evaluative perception of actual violence; perception and fear of danger; risks, or vulnerability when encountering actual violence; tendency towards violence; tolerance of violence and inclination towards punitive justice; approval of violence; tendency towards criminal activity (hidden delinquency); perception of the context of television violence; perception of police work; perception of judges and the justice system; attitude towards the rights of the accused; causal attributions of the violence and criminal activity of individuals (variables inspired by the cognitive theory on causal attributions); public opinion on the role of information media with regard to the way real violence is reported; perception of the effects of television violence, whether real or fictional; and opinion in the public debate on violence in the media.

to it. Any evidence of an effect of television viewing detected in such a sample could be considered as very robust empirical evidence.[1560]

The evidence found that heavy television viewing, even by those who are media literate, affects the beliefs about the level of violence in society, which "can be seen as robust evidence of the role television plays in the shaping of how we see the world."[1561] In addition, the researchers found that women, especially those under 35, feared the world more than did men. They observe:

> Cognition […] has a positive influence on the level of fear: people who believe the world is dangerous appear to fear it the most. However, this interpretation is misleading: testing for interaction between gender and belief shows that this relationship holds only for women.[1562]

The authors also remark that a focus on broader populations would obtain more conclusive results.

GPI Atlantic has found that defensive expenditures such as private spending on locks, burglar alarms, surveillance systems, security guards, and theft insurance premiums, for the purpose of crime prevention and detection, are indicators of the public's perception of its personal security. A GPI Atlantic report on crime in Nova Scotia notes: "Defensive expenditures increase in direct response to the fear of crime and to subjective perceptions of the likelihood of crime, as well as to objective changes in the crime rate itself, and are, therefore, an important indicator of public perceptions of personal security."[1563] The report finds that in Nova Scotia, real per capita spending on theft insurance has more than doubled since the early 1970s. However, the report did not examine defensive expenditure increases in relation to viewing television violence.

In sum, to the degree that we "learn to live together" from television, true indicators of learning and education might not indicate progress in this sphere in the West. Sadly, conventional learning indicators do not account for the information revealed and documented by so many respectable scientific studies over half a century. The overwhelming body of evidence indicates that television as a medium is not teaching us "to live together" effectively, but rather to live fearfully and aggressively. A focus on this knowledge might potentially have some effect on future television programming, and on political and social action geared to improving the ways in which we transmit and teach how we can live together more effectively and peacefully.

[1560]Gosselin, deGuise, Paquette, and Laplante. "Violence on Canadian Television and Some of Its Cognitive Effects."
[1561] Ibid.
[1562] Ibid.
[1563] Dodds, Colin, and Ronald Colman. *The Cost of Crime in Nova Scotia*, Genuine Progress Index Atlantic (GPI Atlantic), 1999; accessed December 2005; available from http://www.gpiatlantic.org/publications/socialcapital.shtml - crime. p. 149.

14.3.4 Desensitization and measures of empathy

The "gap between the representation of suffering and our ability to be moved by it" is seen in the television violence literature as a "failure of empathy."[1564] Empathy, according to Jeanne Funk, et al. is "the capacity to perceive and to experience the state of another."[1565] Failure of empathy is also referred to in the literature as "desensitization," defined as "diminished psychological responsiveness to a stimulus after repeated exposure to it."[1566]

Allen Hertzke of the University of Oklahoma notes:

> Desensitization, in which violence is seen as 'no big deal,' emerges as one of the commonest indirect effects of media violence. A desensitized individual feels less empathy for the victims of real-life violence and proves to be far less likely to intervene on the victim's behalf. While desensitization to violence does not necessarily mean that the viewer is more violent, it does make him more likely to accept violent acts done by others.[1567]

According to Lasn, news reports of wars, killings, and atrocities; advertising exploitation of serious social issues; violent video games in which killing seems to have no human impact; and other mediated imagery, have been shown to erode public sensitivity to violence and compassion.[1568] While compassion is generally the first innate and natural human response to suffering, Lasn observes that emotions become blunted with repeated viewing of images of death, violence, and destruction, and that the ability to empathize and to take social issues seriously is decreased through such repeated de-personalized exposure to suffering.[1569] Such a blunting of compassion also signals a deterioration in the learning environment and learning context, and a failure in what Delors calls "learning to be."

Bok refers to this "numbing, or desensitization," as "learned pitilessness," and observes that this effect is "commonly noted" in the research literature.[1570] She notes that a degree of numbing is a natural response, but it becomes problematic when empathy, or "the

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[1564] Dean, Carolyn J. "Empathy, Pornography, and Suffering," *differences: A Journal of Feminist Cultural Studies*, vol. 14, no. 1, 2003: 88-125. p. 88.

[1565] Funk, Jeanne B., Heidi Bechtoldt Baldacci, Tracie Pasold, and Jennifer Baumgardner. "Violence Exposure in Real-Life, Video Games, Television, Movies, and the Internet: Is There Desensitization?," *Journal of Adolescence*, vol. 27, 2004: 23-39. p. 26.

[1566] Carnagey, Nicholas L., and Brad J. Bushman. *Violence, Desensitization*, Iowa State University and the University of Michigan, 2005; accessed January 2007; available from http://users.wfu.edu/carnagnl/pubs/06CB2.pdf. p. 1.

[1567] Hertzke, Allen D. "The Theory of Moral Ecology," *The Review of Politics*, vol. 60, no. 4, 1998: 629-660. p. 640.

[1568] Lasn. *Culture Jam: How to Reverse America's Suicidal Consumer Binge - and Why We Must*.

[1569] Ibid. p. 23.

[1570] Bok. "Violence, Free Speech, and the Media." p. 61.

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ability to feel with and for others and to respond to their suffering," is suppressed. According to the American Psychological Association: "Viewing violence increases desensitization to violence, resulting in calloused attitudes toward violence directed at others and a decreased likelihood to take action on behalf of the victim when violence occurs (behavioral apathy)."[1571]

Freedman reports that in the 1970s, a number of studies showed that repeated exposure to television violence was a major factor in the desensitization of individuals to such violence.[1572] For example, in 1973, Cline, Croft, and Courrier, who studied young boys ages 7 to 14 years for approximately two years, found that "boys who watch more than 25 hours of television per week are significantly less likely to be aroused by real world violence than those boys who watch 4 hours or less per week."[1573]

The relationship between playing video games and desensitization has recently been the focus of research. In the U.S., Funk, et al., who studied measures of media violence exposure and empathy in 150 fourth and fifth grade students, who had an average age of 9.99 years, note that video games normalize violence:

> [V]iolent video games have the added dimension that one creates and participates in violent actions. Such games condone, promote, and justify the use of violence while concealing realistic consequences. Violence is acceptable because it is not real, therefore 'victims' do not really suffer. Playing violent video games could contribute to the development of proviolence attitudes because these games normalize violence and desensitize the player to the real-life consequences of violence.[1574]

Funk, et al. administed various psychological scales to the children, which included the KID-SAVE 34-item questionnaire developed to assess real-life violence exposure, the Attitudes Towards Violence Scale: Child Version, the Children's Empathy Questionnaire, and a background questionnaire, which asked questions about the average time per week spent playing video games, watching television, video, and movies, and using the Internet. The strongest correlation was found between desensitization, as reflected in empathy and attitudes towards violence, and video game exposure, which was associated with lower empathy and stronger proviolence attitudes.[1575]

[1571] American Psychological Association Commission on Youth and Violence. *Violence and Youth: Psychology's Response*, Washington, D.C.: American Psychological Association, 1993. cited in Bok. "Violence, Free Speech, and the Media." p. 62.

[1572] Freedman. *Research on the Effects of Media Violence*, accessed.

[1573] Ibid., accessed. p. 3. citing Cline, V. B., R. G. Croft, and S. Courrier. "Desensitization of Children to Television Violence," *Journal of Personality and Social Psychology*, vol. 27, 1973: 360-365.

[1574] Funk, Baldacci, Pasold, and Baumgardner. "Violence Exposure in Real-Life, Video Games, Television, Movies, and the Internet: Is There Desensitization?" p. 26.

[1575] Ibid.

In another recent study of video game use and desensitization, Bartholow, et al. studied 39 male, undregraduate students, in what they report "is the first [study] to link video game violence exposure and aggressive behavior to brain processes hypothetically reflecting desensitization in the adverse motivational system."[1576] According to Bartholow, et al., low arousal in the adverse motivational system is typically found in antisocial personality disorder. The authors found that "repeated exposure to violent video games is reflected in the brain as blunted evaluative categorization of violent stimuli."[1577]

However, as Tom W. Smith of the University of Chicago argues, one of the limits of previous social science research is that most of the research is based on small, non-representative samples, often of children or university students.[1578] He notes that these studies "suffer from serious, external-validity problems and do not tell social scientists and others about the extent of behaviors and values in society-at-large."[1579] However, efforts in the U.S. "to expand knowledge about the level, nature, and associates of empathy and altruism in American society"[1580] have included empathy and altruism scales in the 2002 and 2004 U.S. General Social Surveys (U.S.-GSS), which are national, representative samples of American adults. Although the U.S.-GSS does not relate empathy to viewing television violence, they do demonstrate that it is possible to measure empathy and altruism on a large scale. In 2002, there were 1366 completed surveys on the U.S.-GSS, and in 2004 there were 1329 completed surveys.

Aspects of altruism measured in the U.S.-GSS included altruistic love (4 items on the questionnaire, only used in 2004), altruistic values (4 items), altruistic behaviours (15 items), and empathy (7 items). The difference between altruistic love and altruistic values is that the former is personal and relates to people one knows, whereas altruistic values are more general and include people one does not know. Also, empathy scales are more emotionally oriented than altruistic value scales, which are more cognitively oriented. In addition, in 2004, a Daily Spiritual Experience scale (15 items) was added. Smith provides detailed information on the scales, questions employed, and results in his 2006 paper, *Altruism and Empathy in America: Trends and Correlates.*[1581] The questions used on the five scales can be found in Appendix 28 of this literature review.

Overall, the surveys found a high level of altruism and empathy in the populace. Smith notes several significant changes between 2002 and 2004. However, data from only two

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[1576] Bartholow, Bruce D., Brad J. Bushman, and Marc A. Sestird. "Chronic Violent Video Game Exposure and Desensitization to Violence: Behavioral and Event-Related Brain Potential Data ", *Journal of Experimental Social Psychology*, vol. 42, 2006: 532–539. p. 539.

[1577] Ibid. p. 537.

[1578] Smith, Tom W. *Altruism and Empathy in America: Trends and Correlates*, National Opinion Research Center, University of Chicago, 2006; accessed January 2007; available from http://www-news.uchicago.edu/releases/06/060209.altruism.pdf.

[1579] Ibid., accessed. p. 1.

[1580] Ibid., accessed. p. 1.

[1581] Ibid., accessed.

years is insufficient to determine actual trends. Specifically, Smith found that three of the seven empathy items showed statistically significant change:

> People were more likely to describe themselves as having tender, concerned feelings towards the less fortunate in 2004 than in 2002 (+5.2 percentage points at 4 or 5 on the scale), and as more soft-hearted (+4.0 points), but as less 'touched by things that I see' (-0.9 points).[1582]

Two of the four altruistic value measures increased: "Agreement that people have to take care of themselves and not depend on others dropped by 5.3 points and those saying that 'people need to look after themselves and not overly worry about others' fell by 7.0 points."[1583] In addition, three of the 15 actions listed under altruistic behaviour (allowing someone to cut ahead, carrying belongings for another, and returning extra change) showed statistically significant increases in the means for the actions. No trend was available for altruistic love since it was only measureed in 2004.

The results showed some surprising correlations. Among the results of the U.S.-GSS reported by Smith are the following:

- Gender is strongly associated with empathy and altruistic values, with women scoring higher on both, but is not associated with altruistic behaviours.
- Altruistic values increase with education.
- Altruistic love is higher among the less educated and among men. Smith notes: "The gender difference may reflect an element of protective stoicism that is more prevalent among men."[1584]
- The altruistic behaviour measure found that such behaviour is not related to education or income, but that helping is higher among those with lower incomes.
- Empathy, altruistic love, and altruistic values are greater in rural areas than in urban areas, but altruistic behaviour is greater in large cities, which Smith notes "may largely reflect greater opportunities to render assistance as one is likely to come into conduct with more people and certain situations may be more common in urban areas (e.g., being approached by a homeless person, encountering strangers with various needs)."[1585]
- Altruistic behaviours are unrelated to civic engagement, although empathy and altruistic values are greater among people who voted.
- Age is mostly unrelated to empathy, although older adults tend to have more altruistic love and values than do young adults.
- Income and labour-force status are unrelated to empathy and altruism.
- Those who have personal, spiritual experiences (however one personally defines the divine or holy) were more altruistic and empathetic than those who did not

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[1582] Ibid., accessed. p. 4.
[1583] Ibid., accessed. p. 4.
[1584] Ibid., accessed. p. 14.
[1585] Ibid., accessed. p. 7.

have these experiences. However, religious attendance showed a more modest association, leading Smith to suggest "that a person's personal spiritual engagement rather than participation in organized religion may be of greater importance."[1586]

Particularly unexpected are the findings that altruistic love is higher among the less educated, that altruistic behaviour is not related to education or income, and that helping is higher among those with lower incomes.

Whether a populace is becoming more or less altruistic and empathetic relates to the Delors "learning to be" and "learning to live together" categories, as well as to the values of individualism/ collectivism discussed in Chapter 5. As the U.S. General Social Survey shows, these values, attitudes, and behaviour can be measured on a large-scale population survey.

14.3.5 Living in virtual realities

According to Lasn, the learning environment in the West has been shaped, and re-engineered, almost entirely by the electronic mass media environment, which for the first time in human history has moved Western society from living in a natural world to living in a world that is manufactured or mediated. "When you cut off arterial blood to an organ, the organ dies. When you cut the flow of nature in people's lives, their spirit dies. It's as simple as that."[1587]

Recent studies show that environmental factors can affect physiological systems and health. For example, the June 2003 issue of the *Journal of Environmental Psychology* is entirely devoted to restorative environments. All of the articles and research reported in the issue support the hypothesis that natural environments enhance restoration, health, and a positive learning environment that is conducive to learning.[1588] For example, Terry Hartig, et al. suggested that walking in a nature reserve decreased blood pressure and stress more than walking in urban surroundings.[1589] Furthermore, "positive affect" increased and anger decreased by the end of the walk in the nature reserve, while the opposite pattern occurred in the urban setting.

Lasn argues:

[1586] Ibid., accessed. p. 9.
[1587] Lasn. *Culture Jam: How to Reverse America's Suicidal Consumer Binge - and Why We Must*. p. 6.
[1588] Hartig, Terry, and Henk Staats. "Guest Editors' Introduction: Restorative Environments," *Journal of Environmental Psychology*, vol. 23, no. June, 2003: 103-107.
[1589] Hartig, Terry, Gary W. Evans, Larry D. Jamner, Deborah S. Davis, and Tommy Garling. "Tracking Restoration in Natural and Urban Field Settings," *Journal of Environmental Psychology*, vol. 23, no. June, 2003: 109–123. p. 109.

Layer upon layer of mediated artifice come between us and the world until we are mummified. The commercial mass media are rearranging our neurons, manipulating our emotions, making powerful new connections between deep immaterial needs and material products […]. So gradually is the dosage increased that we're not aware of the toxity.[1590]

Lasn suggests that we need a "reality index" to measure the ratio of time spent in a virtual versus a "real" environment.[1591] For starters, he suggests that personally, people could write down the number of times a day they laugh at real jokes with real people in real situations compared with the number of times they laugh at media-generated jokes.

In addition, Ross McDonald notes that television, in seeking to capture the "public mindshare," erodes the social and cultural engagement of life.[1592] It removes the viewer from the immediate and social environment, and reduces social interaction to the extent that "the verbal interaction that allows for sharing, learning, and building collective perspective" is eliminated:

> The absorption that television commands clearly involves a withdrawal from intimate social connectedness but this disruptiveness is not just limited to the home, it is clearly visible in broader patterns of community vitality, or what has become known in Western parlance as 'social capital.' Social capital refers to the overall health of social connectedness—feelings of common purpose, common identity and common commitment.[1593]

The insights of Lasn and McDonald above may be very significant from a wellbeing perspective. They demonstrate that it is worth giving serious consideration to understanding the proportion of learning that takes place in virtual realities rather than in natural, social, community, and inter-personal settings, and whether that proportion is increasing or not.

14.3.6 Omnipresent advertising

Lasn views advertising, which he labels as "hype," as the most prevalent and toxic of the mental pollutants. He cites data that show "microjolts of commercial pollution flood into [the North American] brain at the rate of about three thousand marketing messages every day. Every day, an estimated 12 billion display ads, 3 million radio commercials, and

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[1590] Lasn. *Culture Jam: How to Reverse America's Suicidal Consumer Binge - and Why We Must.* p. 12.
[1591] Ibid. p. 22.
[1592] McDonald. "Television, Materialism and Culture: An Exploration of Imported Media and Its Implications for GNH [Gross National Happiness]." p. 73.
[1593] Ibid. p. 71.

more than 200,000 TV commercials are dumped into North America's collective unconscious."[1594]

Advertising is clearly a major source of informal learning for North Americans. If Lasn is correct in his depiction of advertising as a form of mental pollution, then this learning, like propaganda, undermines true knowledge based on evidence, and constitutes an obstacle to the attainment of wisdom as defined earlier. If advertising in fact weakens the potential for an educated populace, then a diminution in the amount of exposure to advertising signals genuine progress.

It may be argued that advertising provides a service by letting consumers know what their choices are and what is available to them. But that function could also be performed through unbiased and impartial means, like consumer reports that evaluate products according to set criteria. Advertising by definition has a bias towards the product it is trying to sell, and bias, in turn and also by definition, distorts true learning. It might also be argued that advertising can indirectly provide benefit by financing some true educational activity, but we are here concerned with the direct impact of advertising on the learning environment.

According to the *2001 Television Commercial Monitoring Report* produced by the American Association of Advertising Agencies, and the Association of National Advertisers, the amount of non-program minutes (the majority of which is used for commercial advertising) in prime-time U.S. programming on the four major networks (ABC, CBS, NBC, and FOX) has steadily increased from an average of 13 minutes 26 seconds (13:26) per hour in November 1992, to an average of 16:08 minutes per hour in November 2001.[1595] Daytime non-programming minutes are even higher, increasing from 18:16 minutes per hour in 1992, to 20:57 minutes in 2001, which is over 1/3 of all broadcast time. Clutter is a term used by the advertising industry and others to refer to non-programming material, which includes commercials, station identification, and public service announcements. According to the *2006 Clutter Watch* study by MindShare USA, prime time commercial minutes on conventional networks rose by 2% from 2004-2005, and cable network commercial minutes increased by almost 5%.[1596]

These commercials impact Canadians as well as Americans, since Canadians watch a great deal of American television. For example, as noted above, the latest Statistics Canada data suggest that, in 2004, 82% of the dramas and comedies watched by

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[1594] Crawford, Rick, Dept. of Computer Science, University of California, Davis, and Landler, Mark, Walecia Korad, Zachary Schiller, and Lois Therrien. "What Happened to Advertising?" *Business Week*, September 23, 1991. p. 66, both cited in Lasn. *Culture Jam: How to Reverse America's Suicidal Consumer Binge - and Why We Must*. p. 19.

[1595] American Association of Advertising Agencies, and Association of National Advertisers. *2001 Television Commercial Monitoring Report*, New York, 2002; accessed October 2006; available from http://www.ana.net/com/ta/clutter.pdf.

[1596] MindShare. *Clutter Watch*, MindShare, 2006. cited in Summerfield. *MindShare: Clutter on the Rise on US TV; Canucks Won't Stand for It*, accessed.

Canadians over the age of two are from "foreign programs," and presumably most of that is from American programs.[1597]

In Canada, the Canadian Radio-television and Telecommunications Commission (CRTC) limits advertising minutes to 12 minutes per hour, so Canadian stations that show American programs must fill the extra minutes allotted for commercials in the American program with public service announcements and the promotion of Canadian programs.[1598] According to the Association of Canadian Advertisers (ACA), most broadcasters routinely stretch these guidelines and, in some cases, have used as many as 22 minutes per hour for non-program content.[1599] The ACA 2002 report, *Blind Date: The 2002 Canadian Television Monitoring Report,* which it calls "the first comprehensive look at commercial clutter on Canadian television," found that, in 1998, over 80% of broadcast hours contained over 12 minutes of commercials.[1600] This raises the question of why the regulation limiting advertising on Canadian television is not enforced, and why this regulation can be "routinely stetched."

Unfortunately, the full ACA report is only available to members of the ACA, so we were not able to access it directly. This again illustrates the need for official, national monitoring on an issue of such concern to the public interest and of such importance to the learning environment. We should not have to rely on a commercial publication that is not in the public domain and is available only to advertisers to get information on these issues.

Advertising is not just confined to radio and television, however. It is found almost everywhere there is an empty space—on buses, billboards, classroom walls, clothing, computers, food, and so on. Advertising jingles are stuck in the heads of millions of people.

Business interests, Ungar observes, have turned the material surfaces of the world into continuous screens for displaying popular culture and its products, in order to fuel sales and economic growth.[1601] Ungar notes the readily observable fact that popular culture is unavoidable:

> T-shirts, hats, shoes, backpacks, beach towels, billboards, posters, postcards, 'collectable' cards, calendars, mugs, candy, cartoons, magazine and newspaper articles, talk shows on television, advertisements, films, the Internet, video games,

[1597] Statistics Canada. "Television Viewing."

[1598] Summerfield. *MindShare: Clutter on the Rise on US TV; Canucks Won't Stand for It*, accessed.

[1599] Association of Canadian Advertisers (ACA). *Blind Date: The 2002 Canadian Television Commercial Monitoring Report*, ACA, 2002. cited in Summerfield. *MindShare: Clutter on the Rise on US TV; Canucks Won't Stand for It*, accessed.

[1600] Association of Canadian Advertisers (ACA). *Widely-Supported Advertising Industry Study Finds Excessive Levels of Commercial Clutter in Canadian Television Markets*, ACA, August 1, 2002; accessed October 2006; available from http://www.aca-online.com/news1/default.asp?articleID=215.

[1601] Ungar. "Knowledge, Ignorance and the Popular Culture: Climate Change Versus the Ozone Hole."

toys, chain restaurants, and even schools and universities, all provide screens for displaying the celebrity facts that dominate popular culture. By means of its unavoidable hyper-presence, the popular culture becomes familiar by osmosis. It is literally 'in the air,' and all but unavoidable.[1602]

While television and advertising affect how we "learn to know" (to use the framework of Delors' four pillars of learning), television, television advertising, and advertising in general, also affect how we "learn to be." Ross McDonald notes that commercial television directly shapes and strengthens materialism and a materialist social ethic.[1603] According to Sheldon Ungar, modern Western society, of which television advertising is one manifestation, is currently based on materialist capitalism, which champions individualism as its predominant ethos. All social and ethical structures, according to Ungar, therefore manifest and revolve around the view and practices of capitalism, including schools, work, entertainment, family situations, community, ideas concerning competition, hard work, and speed. Western schooling, and, indeed, culture, argues Ungar, therefore shape what students supposedly need to know in the twenty-first century to the needs of business.

McDonald reports that U.S. researcher, Tim Kasser, who has done extensive empirical research on materialism and wellbeing, finds that a materialistic attitude is associated with attitudes that decrease engagement with reality, inhibit learning, and increase rates of depression, anxiety, insecurity, physical illness, social isolation, and dissatisfaction with life.[1604] If empirical evidence does indeed demonstrate that a materialistic outlook is associated both with an adverse learning environment and with poorer wellbeing outcomes, and if advertising fuels such materialism, then a decline in exposure to advertising could be seen as a sign of genuine progress. Kasser observes:

> Existing scientific research on the value of materialism yields clear and consistent findings. People who are highly focused on materialistic values have lower personal wellbeing and psychological health than those who believe that materialistic pursuits are relatively unimportant. These relationships have been documented in samples of people ranging from the wealthy to the poor, from teenagers to the elderly, and from Australians to South Koreans […]. The studies document that strong materialistic values are associated with a pervasive undermining of people's wellbeing, from low life-satisfaction and happiness to depression and anxiety, to physical problems such as headaches, and to personality disorders, narcissism and anti-social behaviour.[1605]

[1602] Ibid. p. 301.
[1603] McDonald. "Television, Materialism and Culture: An Exploration of Imported Media and Its Implications for GNH [Gross National Happiness]."
[1604] Ibid.
[1605] Kasser, Tim. *The High Price of Materialism*, Cambridge, Mass.: Bradford Books/MIT Press, 2002. p. 22. cited in McDonald. "Television, Materialism and Culture: An Exploration of Imported Media and Its Implications for GNH [Gross National Happiness]." p. 78.

McDonald suggests that television advertising works to develop feelings of individual deprivation and need, and directly sends the message that material consumption can result in happiness and success.[1606] He notes:

> By falsely insinuating materialism as the necessary means to satisfying our deepest common needs, it creates an inefficient illusion that is deeply damaging to the individuals true capacity for happiness. Indeed to the extent that an unconscious and excessive materialism prevails, it effectively blocks rather than facilitates the effective satisfaction of our most essential non-material needs.[1607]

Author Bill McKibben suggests that the most distinctive feature of the learning environment created by media is self-absorption, as seen in worldviews and commercial advertising positing extreme individualism.[1608] He points out that this is a relatively new phenomenon, since, for most of human history, humans have put something else at the centre of their lives such as the tribe or community, the natural world, or the gods. Without putting self-interest at the centre of concerns, however, McKibben notes that the modern economy, as we know it, would not survive. People might share their tools and appliances, and not buy SUVs or many of the other consumer products advertised, and thus slow growth.

To give just one example of the proven links between television advertising and adverse learning and social outcomes, a recent review of more than 40 studies on the role of the media in increasing rates of childhood obesity concludes that television viewing time, food advertising, and marketing in the media are the main contributors to childhood obesity.[1609] The report cites studies that children see approximately 40,000 television advertisements per year and that the majority of advertisements targeted to children are for food: specifically candy (32% of all children's advertisements), sugared cereal (31%), and fast food (9%). According to Gamble and Cortugna, the data indicate that advertisements for these high-fat foods have more than doubled since the 1980s.[1610]

Nutritional education budgets in schools pale by comparison to advertising budgets for junk food, candy, and sugared cereals, so food advertising is likely a far more potent source of nutritional information for both children and adults than any formal educational structure. A recent GPI Atlantic study on obesity costs reports that:

[1606] McDonald. "Television, Materialism and Culture: An Exploration of Imported Media and Its Implications for GNH [Gross National Happiness]."
[1607] Ibid. p. 79.
[1608] McKibben, Bill. *What's My Damage: A Call for Mental Environmentalism*, Media Carta, 2001; accessed Deember 2005; available from http://adbusters.org/metas/psycho/mediacarta/article2.html.
[1609] Kaiser Family Foundation. *The Role of Media in Childhood Obesity*, 2004; accessed December 2005; available from http://www.kff.org/entmedia/upload/The-Role-Of-Media-in-Childhood-Obesity.pdf.
[1610] Gamble, M., and N. Cortugna. "A Quarter Century of TV Food Advertising Targeted at Children," *American Journal of Health Behavior*, vol. 23, no. 4, 1999: 261-267. cited in Kaiser Family Foundation. *The Role of Media in Childhood Obesity*, accessed.

> The food industry contributes […] $30 billion in advertising to the U.S. GDP, more than any other industry, and much of it promotes the very foods that cause obesity. A 1996 Consumers International Study found that the fast food industry accounts for one third of food advertising expenditures in the industrialized countries. When candy and sweetened breakfast cereals are included, the advertising expenditures account for more than half of all food advertising in the USA, Australia and eleven European countries. Kelloggs spends $40 million a year to promote Frosted Flakes alone.[1611] […] By contrast, nutritional education budgets are insignificant, and register as 'costs' to be cut in ever tighter government budgets.[1612]

If rising rates of obesity, especially among children and youth, are cause for concern from a wellbeing perspective, then it is crucial to understand the origins and methods of transmission of nutritional information and knowledge. Similar examples can be cited in other areas, but the key point is that the role of advertising is a key source of informal learning and that advertising affects both learning and social outcomes.

In sum, therefore, an analysis of advertising exposure and impacts is key to any comprehensive analysis of learning and education, as advertising affects what and how people learn and how they act at least as powerfully as what is learned in formal classrooms. As noted, conventional education indicators generally ignore this form of learning, but an index of wellbeing must take into account the degree to which this commercial saturation improves or undermines wellbeing.

14.3.7 Noise in the learning environment of the public commons

Noise is defined as unwanted sound and vibration in our "public commons,"[1613] and has been shown to affect learning capacity, processes, and outcomes. Noise is usually characterized by the intensity, frequency, periodicity (continuous or intermittent), and duration of sound.[1614] Dr. Sheela Basrur, Medical Officer of Health for Toronto Public Health, observed in 2000 that more people are affected by noise pollution than by any other environmental stressor.[1615]

According to Berglund and Lindvall, noise adversely affects functional and learning capacity, and the capacity to compensate for additional stress, not only in humans but

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[1611] Gardner, Gary, and Brian Halweil. "Nourishing the Underfed and Overfed," in *State of the World 2000*, Worldwatch Institute, chapter 4. New York: W.W. Norton and Co., 2000.

[1612] Colman. *Cost of Obesity in Nova Scotia*, accessed.

[1613] Noise Pollution Clearinghouse. *Website*, accessed December 2005; available from http://www.nonoise.org/.

[1614] Basrur, Sheela V. *Health Effects of Noise*, City of Toronto, Community and Neighbourhood Services, Toronto Public Health, Health Promotion and Environment Protection Office, 2000; accessed December 2005; available from http://www.toronto.ca/health/hphe/pdf/noiserpt_attachmentmarch23.pdf.

[1615] Ibid., accessed.

also in other organisms as well.[1616] The World Health Organization (WHO) notes: "The recognition of noise as a serious health hazard as opposed to a nuisance is a recent development and the health effects of hazardous noise exposure are now considered to be an increasingly important public health problem."[1617]

Schwartz points out that an opportunity to experience silence, "to be receptive, contemplative, and inwardly quiet" is important both for health and wellbeing and for true learning and understanding.[1618] Schwartz notes that noise is a relationship or a "social construction of the meaning of sounds," rather than a thing: "[t]o the degree that we shape, or change, our ideas about the world, we shape not only our image but our sensational experience of our 'environment.'"[1619]

Electrical sounds from the computer, refrigerator, television, the buzz of fluorescent lights; background music from DVDs and Muzak; omnipresent sounds from road, rail, and air traffic; construction and public works; noise from leisure activities, such as motor sports, speed boats, All Terrain Vehicles, and snowmobiles; and neighbourhood noise from lawnmowers and other garden equipment: all of these represent important noise sources that pervade our learning environment and affect learning processes and outcomes. The result, according to analysts, is that perceptions close down in order to filter out the noise so that we will not be conscious of it, although our bodies still react to it.[1620] This closing down, unfortunately, also inhibits our ability to receive new information and thus limits potential learning opportunities.

Noise affects the populace in more ways than annoyance and irritation, and negative effects have been shown to occur at noise levels below those that impair hearing.[1621] In a report prepared for the World Health Organization, Swedish researchers Berglund and Lindvall review research concerning the adverse effects of community noise, which is also called environmental noise or domestic noise.[1622] They found that among the cognitive effects of noise pollution, reading attention, problem solving, and memory are most strongly affected by noise. The authors report that noise can interfere with learning and complex task performance: "Tasks that demand continuous and sustained attention to detail, require attention to multiple cues, and require large working memory capacity are

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[1616] Berglund, Birgitta, and Thomas Lindvall. "Community Noise," *Archives of the Center for Sensory Research (Stockholm, Sweden)*, vol. 2, no. 1, 1995: 1-195. Prepared for the World Health Organization; published by Stockholm University and Karolinska Institute; accessed December 2005; available from http://www.elaw.org/assets/pdf/noise1.pdf; or http://www.who.int/environmental_information/Noise.
[1617] World Health Organization (WHO). *Occupational and Community Noise*, Fact sheet No 258, 2001; accessed October 2006; available from http://www.who.int/mediacentre/factsheets/fs258/en/.
[1618] Schwartz, Hillel. "Noise and Silence: The Soundscape and Spirituality." Paper presented at the Realizing the Ideal: The Responsibility of the World's Religions Conference, Section IV, "Religion and the Ideal Environment", Seoul, Korea, August 20-27, 1995; accessed December 2005; available from http://www.nonoise.org/library/noisesil/noisesil.htm.
[1619] Ibid. p. 11.
[1620] Berglund, and Lindvall. "Community Noise."
[1621] Basrur. *Health Effects of Noise*, accessed.
[1622] Berglund, and Lindvall. "Community Noise."

all susceptible to adverse effects of noise."[1623] For schools, they argue that "the critical effects are speech interference, disturbance of information extraction (e.g., comprehension and reading acquisition), message communication, and annoyance."[1624]

The League for the Hard of Hearing in the U.S. reports: "Noise poses a serious threat to our children's hearing, health, learning and behavior. Recent research suggests that quiet promotes an environment which will foster learning."[1625]

Berglund and Lindvall note noise has also been shown to adversely affect children's cognition and reading skills:[1626]

> [T]here is an abundance of cross-sectional studies and two longitudinal studies showing negative associations between chronic exposure to high noise sources (principally aircraft or road traffic noise) and deficits in reading acquisition among children […]. There is also some evidence that children exposed both at school and at home to loud ambient noise sources are more likely to suffer reading deficits in comparison to those only exposed at school […]. One possible explanation for the relations between chronic noise exposure and reading deficits is that children chronically exposed to noise may suffer from deficits in auditory discrimination. Children exposed to noise where they lived had deficits in auditory discrimination and reading when tested under quiet conditions. The deficits in auditory discrimination largely explained the association between ambient residential noise levels and reading deficits.[1627]

In 1974, Arline Bronzaft of City University of New York conducted a groundbreaking study on the effects of noise on learning in New York City.[1628] In one public school a train went by for 30 seconds every 4.5 minutes and noise levels in the classrooms on that side of the building reached 89dB. By sixth grade, the students on the noisy side of the building showed reading abilities that lagged behind those students on the quieter side by a full year. The report resulted in the city installing noise-hushing rubber pads on the tracks by the school in 1978, and the school adding acoustical ceilings in the noisiest rooms. When the study was repeated in 1981, the children in classrooms on both sides of the school were all reading at the same level. More recent studies have found that children in schools that are in the flight paths of major airports have more difficulty acquiring speech recognition skills and learning to read than similar students in quiet schools.[1629]

[1623] Ibid. p. 55.
[1624] Ibid. p. 97.
[1625] League for the Hard of Hearing. *Noise and Its Effect on Children's Learning*, 2006; accessed October 2006; available from http://www.lhh.org/noise/children/learning.html.
[1626] Berglund, and Lindvall. "Community Noise."
[1627] Ibid. p. 56.
[1628] Bronzaft, Arline, cited in Wolkomir, Richard, and Joyce Wolkomir. "Noise Busters," *Smithsonian*, vol. 31, no. 12, 2001: 89-95.
[1629] League for the Hard of Hearing. *Noise and Its Effect on Children's Learning*, accessed.

In 2001, U.S. researchers from the National Center for Environmental Health of the Centers for Disease Control and Prevention analyzed results from the Third National Health and Nutrition Examination Survey audiometric tests of 5,249 children ages 6 to 19 years for "noise-induced hearing threshold shifts" (NITS).[1630] NITS is hearing loss that is commonly associated with acute or chronic exposure to excessive environmental noise, such as aircraft and traffic noise, power tools, stereos, music concerts, loud toys, and lawn mowers. The researchers found that 12.5% of the children had NITS in one or both ears. They also found that 15.5% of children aged 12 to 19 years, and 8.5% of children aged 6 to 11 years had NITS, which implies that chronic exposure can increase incidence of NITS with age. The researchers argued that these findings "suggest that children are being exposed to excessive amounts of hazardous levels of noise, and children's hearing is vulnerable to these exposures."[1631]

Aside from its direct effect on learning, Berglund and Lindvall also recognize noise as a significant health problem that may affect learning capacity in more indirect ways. They cite evidence that noise causes adverse changes in sleep, memory, blood pressure, digestion, noise-induced hearing loss, and cardiovascular and psychophysiological systems. Noise accelerates and intensifies mental states such as anxiety, depression, anger, distraction, agitation, and emotional stress, and it also affects communication, performance, productivity, and social behaviour.

Measurement of noise

Noise is measured in terms of sound pressure, which is described in terms of decibels (dB), while the unit A-weighted dB (dBA) indicates how humans hear a given sound.[1632] The point where humans begin to hear sound is considered to be Zero dBA. Every 10-decibel increase represents a doubling of the loudness.[1633] Thiessen explains that noise levels are divided into three ranges, depending on their effects on people:

> Levels of 0-40 db[1634] are generally judged as quiet and annoy only if they contain strong tone components. Those between 40 and 80 db may be a nuisance, depending on their nature and the conditions under which they occur. For example, the level of conversational speech at a distance of 30 cm averages about 60 db. A full orchestra may play for extended periods at 80 db and well above that for brief periods, yet we willingly pay for exposure to it. Modern rock concerts can generate noise levels much higher than that. Noise levels of 80-120 db are

[1630] Niskar, Amanda Sue, Stephanie M. Kieszak, Alice E. Holmes, Emilio Esteban, Carol Rubin, and Debra J. Brody. "Estimated Prevalence of Noise-Induced Hearing Threshold Shifts among Children 6 to 19 Years of Age: The Third National Health and Nutrition," *Pediatrics*, vol. 108, no. 1, 2001: 40-43.
[1631] Ibid. p. 40.
[1632] Chepesiuk, Ron. "Decibel Hell," *Environmental Health Perspectives*, vol. 113, no. 1, 2005.
[1633] Wolkomir, and Wolkomir. "Noise Busters."
[1634] Decibels in the literature are interchangeably represented by the symbols db, dB, dBA, and dB(A).

uncommon in our environment, but are common in some industries and at airports.[1635]

General measures include:
- an audible whisper—10dBA
- normal conversation—40 to 65dBA
- refrigerator humming—40dBA
- handheld electronic game—68 to 76dBA
- average city traffic noise—80dBA
- highway noise—from 80 to 90dBA
- gasoline-powered push lawn mower—87 to 92dBA
- dishwashers, vacuum cleaners, and hair dryers can all reach or exceed—90dBA
- subway, motorcycle—90dBA
- leaf blower—95 to 105dBA
- chain saw—110dBA
- snowmobile—120dBA
- "boom cars" driven with the windows down and stereo system turned up abnormally high—140 to 150dBA
- jet engines (near)—140dBA
- jet flyover (1000 feet)—103dBA
- rock concerts (varies)—110 to 140dBA[1636][1637]

The World Health Organization (WHO) reports that brief exposures exceeding 125dBA can cause physical pain, and that an adult can tolerate an occasional noise level of up to 140dBA, but children should not be exposed to levels above 120dBA. In addition, it reports that chronic exposure to industrial, commercial, and traffic areas at levels of 70dBA can cause hearing impairment,[1638] and that regular exposure to levels over 100dBA of more than one minute risks permanent hearing loss.[1639] No more than 15 minutes of unprotected exposures at and above 90–100dBA are recommended.[1640]

Additional effects of noise levels cited in the evidence include:

- sleep disturbance—at levels of 30dBA
- communication disturbances in classrooms— at levels of 35dBA
- annoyance, stress, and health problems—at levels of 50dBA
- aggressive behaviour— at levels of 80dBA

[1635] Thiessen, G. J. "Noise," in *The Canadian Encyclopedia* Historica Foundation of Canada, 2006, accessed October 2006; available from http://www.thecanadianencyclopedia.com/PrinterFriendly.cfm?Params=A1ARTA0005769. p. 1.

[1636] Sources: National Institute on Deafness and Other communication Disorders, Environmental Protection Agency, Noise Pollution Clearinghouse, cited in Chepesiuk. "Decibel Hell."

[1637] Basrur. *Health Effects of Noise*, accessed.

[1638] World Health Organization (WHO). *Occupational and Community Noise*, accessed.

[1639] Basrur. *Health Effects of Noise*, accessed.

[1640] Ibid., accessed.

- hearing impairment—through headphones, at levels of 85dBA.[1641, 1642]

According to Basrur, there is no clear noise level threshold for measuring community noise pollution, since the noise comes from a variety of sources, includes a number of noise events over time, and depends on the time of day or night when the noise occurs.[1643] Also, she notes that people have different levels of tolerance to noise levels and to different types of noise.

Helmut Kallmann, et al. note that a sonic environment (or soundscape), "which is the sum total of all sounds within any defined area, is an intimate reflection of the social, technological, and natural conditions of the area. Change in these conditions means change in the sonic environment."[1644] In addition, the quality of a sonic environment can be measured by examining whether the sounds we hear are louder that our own sounds, and whether or not discrete sounds can be heard clearly against the ambient noise level: "A noisy soundscape drowns out our footsteps, our breathing, and our normal speaking voice."[1645]

Basrur notes that one way that is used to measure excessive noise is the point at which 10% of the population is either highly annoyed by the noise, or otherwise seriously affected, although she recognizes that this method does not accurately reflect the issue of excessive noise and is therefore limited.[1646]

Monitoring noise pollution

The accumulated evidence strongly supports the conclusion that a decline in noise can be confidently interpreted as an improvement in the learning environment and in the conditions for effective education, and therefore as an indicator of genuine progress in this sphere. Unfortunately, the evidence points towards a negative trend in this area. In a separate report, Birgitta Berglund, et al., report:

> Noise pollution continues to grow in extent, frequency, and severity as a result of population growth, urbanization, and technological developments. The growth in urban noise pollution involves direct and cumulative adverse health effects; it

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[1641] World Health Organization (WHO). *Occupational and Community Noise*, accessed.
[1642] Basrur. *Health Effects of Noise*, accessed.
[1643] Ibid., accessed.
[1644] Kallmann, Helmut, Adam P. Woog, and Hildegard Westerkamp. "World Soundscape Project," in *The Canadian Encyclopedia* Historica Foundation of Canada, 2006, accessed October 2006; available from http://www.thecanadianencyclopedia.com/index.cfm?PgNm=TCE&Params=U1ARTU0003743. p. 1.
[1645] Ibid. p. 2.
[1646] Basrur. *Health Effects of Noise*, accessed.

affects future generations by degrading residential, social and learning environments.[1647]

Eric Greenspoon, of Ontario-based NoiseWatch, observes that noise levels, especially from air and ground traffic, have been growing over the past decades, and suggests that the actual sound levels are doubling every ten years.[1648] In 1997, the Urban Noise Task Force conducted a study of noise pollution in Vancouver, based on a public survey, public meetings, and noise complaints to the city.[1649] Prior to that, a survey had been conducted in the early 1970s, but the task force could not compare that earlier survey with the new work. However, the task force concluded: "There is reason to believe […] that the growth of noise in Vancouver has followed the trend seen in most major cities, with an approximate doubling of the intensity every six years."[1650] The task force attributed most of this increase to the growth of air, automobile, bus, and truck traffic, as well as construction machinery noise, air conditioning equipment, gardening equipment such as leaf blowers, and leisure equipment such as jet skis.

Citing U.S. Department of Transportation statistics, Les Blomberg, director of the Noise Pollution Clearinghouse in Vermont, records:

> [A]ccording to certain calculations, in 1997 personal automobile traffic was 360 percent of 1960 levels, and large truck traffic was 430 percent. Airliner travel in 1998 was 600 percent of 1960 levels, and air cargo was up a whopping 2,460 percent. Meanwhile, […] we have new noise sources: In 1960 there were no boom boxes, no boom cars, no leaf blowers, no jet skis, no car alarms and hardly any snowmobiles.[1651]

Statements on growth trends of noise pollution, with the exception of traffic noise, however, are based on mostly anecdotal evidence, since neither the U.S. nor Canada have comprehensive national noise assessment programs. Health Canada has included "noise annoyance" in surveys, which we look at below, and a number of cities, including Vancouver,[1652] Calgary, and Toronto have undertaken municipal surveys. The U.S. Office of Noise Abatement and Control (ONAC) was established in the early 1970s to carry out research, establish noise limits to protect the public health, and educate students

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[1647] Berglund, Birgitta, Thomas Lindvall, and Dietrich H. Schwela. *Guidelines for Community Noise*, World Health Organization, 1999; accessed December 2005; available from http://whqlibdoc.who.int/hq/1999/a68672.pdf. Preface

[1648] Greenspoon, Eric, cited in CBC Marketplace. *Noise Regulations in Canada*, CBC.ca, November 7, 2001; accessed December 2005; available from http://www.cbc.ca/consumers/market/files/home/noise/noise_regulations.html.

[1649] Urban Noise Task Force. *City Noise*, City of Vancouver, 1997; accessed October 2006; available from http://www.city.vancouver.bc.ca/ctyclerk/cclerk/970513/citynoisereport/.

[1650] Ibid., accessed. Introduction, p. 1.

[1651] U.S. Department of Transportation statistics cited by Les Blomberg in Wolkomir, and Wolkomir. "Noise Busters."

[1652] Urban Noise Task Force. *City Noise*, accessed.

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and the general public about noise.[1653] However, in 1982, the Reagan administration closed the ONAC, and activities in this area effectively ceased.

In Canada, all government levels share responsibility for the control of environmental noise, but there is little effort to address noise in a systematic fashion.[1654] Municipalities are the main regulators of noise pollution, mainly through noise control by-laws, municipal land use plans and zoning, and traffic management.[1655] According to Hans Schmidt of The Right to Quiet Society, these by-laws vary considerably from one city to another.[1656] The federal government, through Transport Canada, establishes noise control guidelines for transportation systems including airplanes, trains, and navigable waterways, although no federal body is mandated to regulate railway noise.[1657] In order to assist in land use planning and to discourage residential construction in areas with high noise levels, Transport Canada also maintains a "state-of-the-art noise forecasting system" that maps noise contours.[1658] Health Canada provides advice on health effects of environmental noise to federal environmental assessments. Provincial governments assist municipalities in developing noise control by-laws, and are responsible for controlling operational noise levels of consumer products and vehicles.[1659]

In Europe, on the other hand, urban noise is recognized as a major environmental problem, and the European Union and individual countries have taken steps to begin monitoring noise pollution in a systematic manner. The Environmental Noise European Directive requires that cities over 250,000 inhabitants (later to include cities over 100,000) make a "noise map" by 2007 that shows, in part, the distribution of noise levels within the city. [1660] The noise maps will provide data for the computation of exposure to various noise sources and levels, and help in the development of noise pollution and abatement policies.

The WHO Regional Office for Europe is developing an environmental health indicators system, which will include a core set of noise indicators related to health as one of the targeted areas, and will use the noise maps as part of the indicator system.[1661] Proposed indicators include:

[1653] Chepesiuk. "Decibel Hell."
[1654] Urban Noise Task Force. *City Noise*, accessed.
[1655] CBC Marketplace. *Noise Regulations in Canada*, accessed.
[1656] Schmidt, Hans cited in Ibid., accessed.
[1657] Transport Canada. *Canada Transportation Act*, 2006; accessed October 2006; available from http://www.tc.gc.ca/mediaroom/backgrounders/b06-a001e.htm.
[1658] Transport Canada. "Environment," in *Transportation in Canada*, 1996, accessed October 2006; available from http://www.tc.gc.ca/pol/en/Report/anre1996/tc96_chapter_14.htm.
[1659] CBC Marketplace. *Noise Regulations in Canada*, accessed.
[1660] European Centre for Environment and Health. *Development of Environment and Health Indicators for European Union Countries: Final Report*, Bonn, Grant Agreement SPC 2002300 between the European commission, DG Sance and the World Health Organization, Regional Office for Europe, 2004; accessed January 2006; available from http://www.euro.who.int/EHindicators/Publications/20030625_1.
[1661] Ibid., accessed.

- Population exposed to various noise level ranges per source (air, road, rail, and industrial others)
- Existing national legislation regulations on maximum sound levels at outdoor and indoor leisure events
- Attributable fraction of risk of cardiovascular morbidity / mortality due to noise exposure[1662]
- Self reported noise health effects—annoyance and sleep disturbance
- Existence and effectiveness of national, regional or local action plans for noise reduction
- Willingness to enforce and implement the Environmental Noise European Directive and to enforce noise abatement measures.[1663]

The implementation of these new monitoring measures and indicators will provide vital new data and information that can help understanding of the impacts of noise on learning environments. These proposed European indicators on noise pollution, along with the European noise map monitoring system, provide a model that Canada could adopt to develop a comparable monitoring system and set of indicators that would provide data and allow comparison with the European results.

Noise annoyance surveys in Canada

In the United States, federal policy determinations about transportation noise rely on "dose-response" data, which relate level of physical exposure—using an average day-night sound level of 65dB or above—to self-reported annoyance which is averaged across communities.[1664]

The Vancouver "City Noise" study notes that surveys generally reveal a low level of public awareness on noise issues and little knowledge about its health risks and other negative effects.[1665] Few of the citizens surveyed were aware of noise by-laws or of which government agencies address noise problems.

Annoyance has been defined as "the expression of negative feelings resulting from interference with activities, as well as disruption of one's peace of mind and the

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[1662] This indicator is based on evidence of experimental noise effects in laboratory research, which has found that noise acts as a stressor on the human organism. Epidemiological data exist for the impact of road traffic noise on cardiovascular endpoints, including high blood pressure and ischaemic heart diseases. The indicator provides a measure of the percentage of the population with increased cardiovascular risk due to traffic noise exposure.

[1663] This indicator is composed of two figures, showing the degree to which the different countries are following the Environmental Noise European Directive, and the ratio of the urban population living in areas covered by a "noise map" to the total urban population of the country. This indicator documents political willingness to take action, and describes the level of implementation of the EU directive.

[1664] Transport Canada. *Canada Transportation Act*, accessed.

[1665] Urban Noise Task Force. *City Noise*, accessed.

enjoyment of one's environment."[1666] As noted above, the World Health Organization recognizes that noise pollution is much more than a minor annoyance in communities.[1667] Rather, it is now known to be a serious health hazard, and is seen to be an increasingly important public health problem.

Staples argues that using a technical approach to modelling community annoyance with noise ignores the psychological and social dimensions of the issue (such as exposure history, the value of needs or activities that are disrupted, and the valuation of the noise source), and, therefore, oversimplifies and limits the understanding of noise effects:

> [This method] relies on 'annoyance' as the index of public response to noise without an understanding of the social and psychological variables that determine when a given noise level generates annoyance in a particular individual or particular community […].
>
> [It curtails] a consideration of other key outcomes such as health-related physiological effects (i.e. blood pressure increases […]) that also appear to be moderated by psychosocial variables […].
>
> [C]ommunities, as well as individuals, differ in the criteria they set for acceptable noise levels as a result of factors such as expectations about the amount of quiet that should be available at a particular location, attitudes about the relative importance of economic vs. environmental considerations, and related public discourse.[1668]

G. J. Thiessen notes that humans have the ability to "become habituated to frequent or regular background sounds."[1669] Therefore, their ability to tolerate unhealthy noise increases, especially when they do not realize the health risks involved. Kallmann, et al. of the World Soundscape Project at Simon Fraser University in British Columbia, observe that the "image" of the soundscape is shaped by people's perception of it, and that "people consider noise an inevitable by-product of technological progress. This lack of awareness is dangerous not only from the ecological point of view—the data on the harmful effects of sound pollution are overwhelming—but also from the aesthetic."[1670]

[1666] Suter, A.H. *Noise and Its Effects*, Prepared for the Consideration of the Administrative Conference of the United States, 1991. cited in Basrur. *Health Effects of Noise*, accessed.

[1667] World Health Organization (WHO). *Occupational and Community Noise*, accessed.

[1668] Staples, Susan L. "Public Policy and Environmental Noise: Modeling Exposure or Understanding Effects," *American Journal of Public Health*, vol. 87, no. 12, 1997: 2063-2067. pp. 2063–2064.

[1669] Thiessen. "Noise."

[1670] Kallmann, Woog, and Westerkamp. "World Soundscape Project."

Positive, health-enhancing sounds

In addition to efforts to eliminate noise pollution, there are initiatives to include more positive, health-enhancing sounds into the public commons. For example, the July–August 2005 issue of *Utne Magazine* is devoted to the theme of noise and is titled: "Turn up the Quiet: Cut through the Noise and Hear What Really Matters." One of the articles is an interview with Canadian composer and author Murray Schafer, sometimes referred to as "The Father of Acoustic Ecology."[1671] Schafer founded the World Soundscape Project at Simon Fraser University, which is also affiliated with the Centre for Acoustic Ecology Research at the University of Calgary and the World Forum for Acoustic Ecology. He notes that the European Union has instituted very stiff noise legislation and, as a result, European public transportation and cars are much quieter than they are in the United States.

Schafer, however, is interested not just in defending against unwanted noise. He is also a musician who wants to include the richness of natural environmental sounds, such as the communication systems between birds and animals, as part of our human experience. He argues that these sounds, along with long distance sounds, which previously could transmit important information and act as a key source of learning for traditional and Indigenous peoples, are being lost in the "sonic sewer" of the city soundscape.

In an effort to get his students to learn by listening, he asks them to stand up without making a sound; and if he does hear a sound, the students have to sit down and start again. The result is quiet and a class that is "listening like crazy." He also performs concerts in outdoor, rural environments where the audience can still hear sounds coming from far away. One piece of music that his group performs starts at 5:00 am with the musicians situated sometimes as far as a half mile from each other around a lake. The music is improvised and responds to, blends with, and stimulates the natural sounds—Shafer discovered that when birds are sung to, they sing back.

Shafer's experiments in this area indicate how healthy learning environments can potentially be created through use of sound and through informal, unconventional learning processes that rely on the senses rather than on cognitive functions alone. When asked how to design a healthy soundscape, Schafer gives an example from Japan:

> First, you decide who's going to live there and what kinds of sounds they would like to live with. The Japanese soundscape association decided to ask people to nominate the 100 most beautiful soundscapes in Japan. Thousands and thousands of people replied. They said, the way the waves hit a particular shell from a sea creature on a particular beach—it sounds very different from pebbles and sand, it's a unique sound.

[1671] Razdan, Anjula. "The Father of Acoustic Ecology: A Conversation with R. Murray Schafer." *Utne Magazine*, July-August, 2005, 57-59.

> The people from the association would then go and hear the sound and if they agreed, they would put it on the 100 most beautiful soundscapes in Japan. And so those places are protected. They're like heritage sites. If you wanted to put a cement factory next to one, you probably would have a great deal of difficulty. They're protecting the environment by using sound creatively—and consulting people. Pass it back to the people. I don't think people want a lot of noise. I think they're frightened to complain and say they would like it to be a bit quieter.[1672]

Kallman, et al. note that beyond fighting sound pollution, sound ecologists are working to design healthier and more pleasant sonic environments that will contribute to the wellbeing of the populace:

> Continual sensitization of the ear, creative town planning, legislative action (noise abatement regulations), the design of acoustic parks and playgrounds, and the innovative preservation of worthwhile sounds of past and present may be among the means to achieve such ends.[1673]

The discussion is important not only because it highlights the potentially adverse effects of noise on learning, but because it illustrates the profound forms of learning that can occur through non-conventional and non-cognitive means.

[1672] Ibid. p. 59.
[1673] Kallmann, Woog, and Westerkamp. "World Soundscape Project." p. 3.

15. Quality of Information in the Learning Environment

> *Education's real opposite, as Socrates saw so clearly is not ignorance but knowingness.*
>
> Mark Kingwell[1674]

15.1 Knowledge gaps: uncertainty / ignorance studies

Ordinary observation of the human condition easily perceives that change, impermanence, uncertainty, and ignorance are facts of life—they are always present in any relative situation manifested in the biosphere. According to Bouissac, arrogance and lack of humility produce a "self-ignored" ignorance, or an "absence of knowledge caused by the absence of a stage of uncertainty."[1675] The awareness of uncertainty and change both as a fundamental human condition, and as a key stage in genuine learning and education is a crucial element to understand in assessments of educational attainment.

Bouissac notes that this awareness of uncertainty manifests in the recognition of 'fuzzy' areas where normative values are needed to distinguish between what is beneficial and what is destructive, and where we might ask how aware we are of our ignorance as a society, or whether our society is instead built on a bias of arrogance and certainty, claiming to have all the answers. The distinction, according to Bouissac, is whether uncertainty is treated as nihilistic (and therefore a threat to established views and norms), or as an inspiration to greater wisdom. From the perspective of an educated populace, the former condition signals an unhealthy learning environment, and the latter a much healthier and more open context for learning.

Researchers who are beginning to look more closely at uncertainty see it both as an inevitable condition and as a "social construction."[1676] In both cases, terms are used such as knowledge gaps, rejected knowledge, lost knowledge, surprises, anomalies, mysteries, uncertainties, errors, ambiguities, confusion, bias, and irrelevance. Those who work in the new field of "ignorance studies" complain of encountering pressures to speak in conventional terms of "uncertainty" rather than "ignorance," even when the study concerns the "outright absence of knowledge."[1677] Michael Smithson, of the Australian National University, observes: "Uncertainty is rather fashionable these days, but

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[1674] Kingwell, Mark. "School Is Evil, but Ignorance Is Hell." *THIS Magazine*, July/Aug, 2001, 35. p. 2.
[1675] Bouissac. "The Construction of Ignorance and the Evolution of Knowledge."
[1676] Stocking, S. Holly. "On Drawing Attention to Ignorance," *Science Communication*, vol. 20, no. 1, 1998: 165-178.
[1677] Dirk, Lynn. "Scientific Literacy, Ignorance Studies: Reflections from Science Communication," *CBE Views*, vol. 22, no. 4, 1999: 124-125. p. 125.

ignorance is a broader, more profound, and more challenging concern. My view is that we often are really dealing with ignorance even when we claim that it's uncertainty."[1678]

Analysts who see the value of understanding the uncertain human condition see it not as something threatening to be avoided or eradicated, but as something to be embraced as enhancing learning and knowledge. Science historian Jerome Ravetz observes: "Being mindful of certain kinds of ignorance may also foster humility, which has all but disappeared from science and the training of scientists, sometimes with disastrous consequences."[1679]

Holly Stocking notes the importance of "unlearning," since "much of what you have learned over the years prevents you from seeing […]. If you concentrate on the spaces around the knowledge, if you focus on what you don't know, on ignorance, you may do a better job of knowing."[1680]

Those studying ignorance as a social process look at issues such as the biases inherent in what does and does not get funding for research, and the deliberate ignoring of important issues as functional, rather than as the result of cognitive deficits or illiteracies. An example of the latter might be the refusal of workers in a nuclear power plant to learn about and know the dangers of their environment, since they might not want to do anything to jeopardize their job, including learning of its hazards.

Smithson developed a six-part taxonomy of the usual forms of ignorance, speaking of it as an "antonym to knowledge" and as a "starting point in the quest for knowledge":

> All of the things:
> 1. of which people are aware they do not know (the most recognized form of ignorance)
> 2. people think they know but do not (ignorance based on error)
> 3. of which people are not aware that, in fact, they do know (intuition)
> 4. people are not supposed to know but could find helpful (taboo)
> 5. too painful to know (psychological suppression of memory)
> 6. of which people are not aware that they do not know (ignorance-squared)[1681]

This taxonomy of what people do not know also reflects, by extension, what people do know. It also has profound implications for learning, as discussed below. In this section, we briefly look at numbers 1, 2, 3, and 6 above. These are the elements of Smithson's

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[1678] Smithson, Michael. *Ignorance and Uncertainty: Emerging Paradigms (Cognitive Science)*, New York: Springer, 1989.
[1679] Ravetz, Jerome. "The Sin of Ignorance: Ignorance of Ignorance," *Knowledge: Creation, Diffusion, Utilization*, vol. 15, no. 2, 1993: 157-165., cited in Stocking. "On Drawing Attention to Ignorance." p. 176.
[1680] Stocking. "On Drawing Attention to Ignorance." p. 176.
[1681] Smithson. *Ignorance and Uncertainty: Emerging Paradigms (Cognitive Science)*. p. 9, cited in Thompson, Herb. "Ignorance and Ideological Hegemony: A Critique of Neoclassical Economics," *Journal of Interdisciplinary Economics*, vol. 8, no. 4, 1997: 291-305. p. 292.

taxonomy most directly relevant to an assessment of how conducive the learning environment is to learning and education. Numbers 4 and 5 above—taboo subjects and the psychological suppression of memory—are beyond the purview of this literature review. Aspects of this discussion—which partially come from Eastern thought—might be of particular interest to Bhutanese educators who are interesting in infusing GNH values and principles into their educational system. In particular, cultivating an open mind, mindfulness, awareness, and contemplative abilities in students could provide a basis for this inclusion.

15.1.1 The value of acknowledging ignorance

- *All the things of which people are aware they do not know (the most recognized form of ignorance)*

The value of uncertainty and ignorance have been recognized in Western science and philosophy since the ancient Greeks, when Socrates noted that "the greatest knowledge we can possess is the awareness of our boundless, fathomless ignorance."[1682] Professor Emeritus Paul Bouissac from the University of Toronto remarks that the real measure of knowledge is uncertainty, which in turn depends on the awareness of ignorance.[1683] He cites Duncan and Weston-Smith who, in 1977, published a collection of articles written by prominent scientists entitled *The Encyclopedia of Ignorance*.[1684] These scientists had been invited to discuss the unanswered, or unanswerable, questions in their respective fields. Bouissac describes the result:

> Each one relies on a particular rhetoric to express this essential absence of knowledge. For example, some evoke a daunting horizon of increasing complexity, some wonder whether the human brain can cope at all with this complexity beyond the requirements of extended survival strategies, some even question the very possibility of knowledge. For instance, Lehman, a computer scientist, declares in conclusion of his contribution: 'Total knowledge, the final state, can never be reached. Ignorance must always be present.'[1685]

Thus, any new discovery brings with it a new set of unanswered questions and a new degree of uncertainty. Heylighen and Bernheim recognize that knowledge is in principle always an incomplete model of partial elements of an infinitely complex universe. Because of the unknown elements, the most well-intentioned actions can result in "an

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[1682] Socrates. Cited in Thompson. "Ignorance and Ideological Hegemony: A Critique of Neoclassical Economics." p. 296.
[1683] Bouissac. "The Construction of Ignorance and the Evolution of Knowledge."
[1684] Duncan, R., and M. Weston-Smith, eds. *The Encyclopedia of Ignorance*. Oxford, Pergamon, 1977., cited in Bouissac. "The Construction of Ignorance and the Evolution of Knowledge." p. 6.
[1685] Duncan, and Weston-Smith, eds. *The Encyclopedia of Ignorance*., cited in Bouissac. "The Construction of Ignorance and the Evolution of Knowledge." p. 6.

element of blindness or unpredictability."[1686] They note: "Examples abound of wonder cures with fatal side-effects, household chemicals that cause cancer, social housing projects that engender vandalism and crime, or political utopias that can only survive through harsh repression."[1687]

Wes Jackson, in a talk given to a 2004 conference at The Land Institute entitled "The Need for an Ignorance-Based Worldview," speculated: "Imagine an ignorance-based science and technology in which practitioners would be ever conscious that we are billions of times more ignorant than knowledgeable and always will be."[1688] To illustrate, he then read a passage from an Aldo Leopold essay called "The Last Stand," which describes a forest in the Alps that has produced quality timber in a sustainable way since the 1600s and compares this with one that was clear-cut during the same time:

> Despite this rigid protection, the old slashing now produces only mediocre pine, while the unslashed portion grows the finest cabinet oak in the world; one of those oaks fetches a higher price than a whole acre of the old slashings. On the old slashings the litter accumulates without rotting, stumps and limbs disappear slowly, natural reproduction is slow. On the unslashed portion litter disappears as it falls, stumps and limbs rot at once, natural reproduction is automatic. Foresters attribute the inferior performance of the old slashing to its depleted microflora, meaning that underground community of bacteria, molds, fungi, insects and burrowing mammals which constitute half the environment of a tree.[1689]

Jackson points out that the term "microflora" implies scientific knowledge to the layperson. However, science knows almost nothing about microflora beyond that they exist. He notes: "In a few simple communities like alfalfa, science knows how to add certain bacteria to make the plants grow. In a complex forest, science knows only that it is best to let well enough alone."[1690] Jackson argues that we can't possibly know or keep track of the information-rich world that has evolved complex life forms over a long evolutionary history. In sum, our conventional education indicators are so focused on the information that we expect students to absorb and on the knowledge we expect them to acquire (as assessed by tools like standardized testing) that we fail to acknowledge the value of imparting humility on the limits of human knowledge and the wisdom in reflecting on our relative ignorance of the world.

Quantum mechanics has shown that it is impossible to design an objective experiment to discover the "truth," since the subjective choice of the investigator is always involved. The test may err either by being overly selective and thereby rejecting possible

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[1686] Heylighen, and Berheim. *Global Progress II: Evolutionary Mechanisms and Their Side-Effects*, accessed.
[1687] Ibid., accessed. p. 31.
[1688] Jackson, Wes. "Toward an Ignorance-Based World View," *The Land Report*, vol. 81, no. Spring, 2004: 14-16. p. 2.
[1689] Ibid. p. 3.
[1690] Ibid. p. 3.

correlations, or it might be overly sensitive, accepting accidental correlations.[1691] In either case, a choice must be made between two types of error. As Ravetz articulates it, "The result of that value-laden choice shapes both our knowledge and our ignorance […]. The presence of values in all research is a reminder of the related impossibility of eradicating uncertainty."[1692]

Ravetz complains that students are:

> … stuffed […] full of facts accepted as important and true at the moment of teaching. There is never time for reflection, for perspective, for the cultivation of awareness […]. At a time when ignorance swamps knowledge in the face of global problems that are created by science-based technology, this pride in scientific knowledge and ignorance of ignorance is deeply dangerous.[1693]

From the perspective of designing curricula for an educated populace, this critique indicates that our awareness of the limitations of our knowledge might reveal an important aspect of our collective humility and wisdom as a populace, and open the populace to the need for deeper reflection and cultivation of awareness.

15.1.2 Value of intuition

- *All the things of which people are not aware that, in fact, they do know (intuition)*

Learning requires openness to the unknown. The third element of Smithson's taxonomy of ignorance indicates that the experience of open mind is a prerequisite for intuition, creativity, or the experience of an undivided whole. And, as Sui points out, the experience of intuition is actually a prerequisite to rational analysis.[1694] He says intuitive insight is "not built up step-by step, as is the case with logical discourse. Instead it is grasped as an immediate total apprehension." This type of awareness requires a sharp precision of mind or intellectual alertness, often described as "mindfulness," in order to remain present in the moment and remain open. This awareness, which can be cultivated by training the mind, is the opposite of ignorance. It is our natural ability to perceive, experience, and know.[1695]

[1691] Ravetz, Jerome. "The Post-Normal Science of Precaution," in *Management of Uncertainty in Science for suSTainability (MUST)*, ed. Sluijs, Jeroen van der, 3-10. Utrecht, Netherlands: Copernicus Institute, Research Institute for Sustainable Development and Innovation, Utrecht University, accessed December 2005, available from http://www.copernicus.uu.nl/downloads/mustbook.pdf, 2002.
[1692] Ibid. pp. 5–6.
[1693] Cited in: Stocking. "On Drawing Attention to Ignorance." p. 166.
[1694] Siu, R. G. H. *The Tao of Science: An Essay on Western Knowledge and Eastern Wisdom*, Boston: The Massachusetts Institute of Technology, 1957.
[1695] Glazer, Steven, ed. *The Heart of Learning. Spirituality in Education*. New York, Tarcher/Putnam, 1999.

Again, it is clear that conventional Western education systems largely ignore this important intuitive aspect of knowledge, and focus almost exclusively on logical, rational processes of acquiring knowledge. Smithson's taxonomy, on the other hand, points towards other potential forms of knowledge that may be at least as important to genuine progress and GNH. Non-Western approaches often seem to acknowledge the more intuitive, holistic aspects of education far more readily than do conventional Western educational systems and structures.

For example, on the one hand, the concept of ignorance and its holistic antidote are considered in ancient systems of spirituality as a basic factor of existence, and on the other, as the basis for moving beyond duality towards true knowledge and wisdom. According to Chögyam Trungpa, the late Tibetan Buddhist sage, "spirituality" simply means, "relating with the working basis of one's existence, which is one's state of mind."[1696] In the Buddhist view, original mind is vast, unbounded, non-differentiated, or whole, and basically pure or healthy. Tibetan master, Dzogchen Ponlop Rinpoche describes Buddhist education as a path of wisdom and knowledge:

> The ground, or basis, of learning in Buddhism is the view that the nature of our mind, no matter who or what we are, is fundamentally pure. The goal of Buddhist education is the bringing about of the full understanding and realization of this basic mind: the mind which has been fundamentally pure and fully awakened right from the beginning. Education is then understood to be like a mirror that allows us to glimpse and recognize our own face: our true nature, our original purity. The practices of education, the various steps that we take, are simply the application of different tools, techniques, and studies that help us to reach this ultimate goal.[1697]

The concept of this pure or "whole" mind, which is not separate from pure heart, is also present in some Western writings. Stephanie Marshall, president of the Illinois Mathematics and Science Academy, for example, feels that "the ultimate purpose of education is to liberate the goodness and genius of all children in the world."[1698] However, while conventional Western education systems focus almost exclusively on the *acquisition* of "new" information and knowledge, the more intuitive and holistic approaches to education focus on the *shedding* of habitual patterns and the *discovery* of an innate wisdom that has been obscured.

Thus, Zen master, Suzuki Roshi, called the vast original mind that is the source of wisdom and understanding "beginner's mind"—a sharp contrast to more conventional

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[1696] Trungpa, Chogyam. *The Sanity We Are Born With: A Buddhist Approach to Psychology*, Boston: Shambhala Publications, 2005. p. 63.

[1697] Ponlop Rinpoche, Dzogchen. "Buddhist Education: The Path of Wisdom and Knowledge," in *The Heart of Learning. Spirituality in Education*, ed. Glazer, Steven, 51-59. New York: Tarcher/Putnam, 1999. pp. 51–52.

[1698] Abbott, John, and Terry Ryan. *The Unfinished Revolution: Ignorance, Interests, Ideology and What We Can Do About It*, London: Network Educational Press, 2000. p. 6.

education approaches that regard "beginning" levels as inferior to intermediate, advanced, and expert levels of knowledge acquisition. For Suzuki Roshi, on the other hand, a beginner's mind is empty of preconceived concepts and therefore open to all potentialities. By contrast, an "expert" mind, which is certain of itself, closes itself to naïve surprises. According to Roshi: "In the beginner's mind there is no thought, 'I have attained something.' All self-centered thoughts limit our vast mind. When we have no thought of achievement, no thought of self, we are true beginners. Then we can really learn something."[1699]

Sui, writing in 1957 from the Taoist tradition in an essay published by the Massachusetts Institute of Technology, calls the vast, pure mind the mind of "no-knowledge," which is considered to be a higher level of cognizance than that of rational knowledge. He makes a distinction between "having no" knowledge and having "no-knowledge": "[t]he former is merely a state of ignorance; the latter is one of ultimate enlightenment and universal sensibilities."[1700] "No-knowledge" is also indigenous to all nature, and facilitates a truer and more profound learning of the nature of phenomena than is possible through rational knowledge. According to Sui:

> With rational knowledge, the scientist is a spectator of nature. With no-knowledge, he becomes a participant in nature […]. With rational knowledge, one is in tune with the scientific man; with intuitive knowledge added, one is in tune with the total man; with no-knowledge added, one is in tune with nature.[1701]

Sui describes the difference between intuitive creativity, and "creativity" that is an extension of rationality, which he also regards as a worthy pursuit. He describes the process of "reaching into this area of ineffability" to tap intuitive insight, which can then be expressed in rational human language:

> Transformation of one rational cog into another, adaptation of a theory to new systems, conversion of a hypothesis into practical hardware are not creative research. These are merely varieties of tautological research […]. Prevailing ideas of thermodynamics, quantum mechanics, enzyme-substrate complexes, and so on, are to be thrown like baited hooks into the ocean of knowledge. If this is repeated with sufficient persistence, some hitherto unknown may be hauled in by the lucky fisherman. But such is not the way of creativity.
>
> Rational hooks do not sink in the waters of no-knowledge. To plumb the depths of no-knowledge, one must rely on one's own ineffable awareness of the ineffable. During this stage rational and factual knowledge is a hindrance and the investigator should keep his mind clear of it. He should try for the complete fusion of his own no-knowledge with the no-knowledge of the comprehended.

[1699] Suzuki, Shunryu. *Zen Mind, Beginner's Mind*, New York: Weatherhill, 1970. p. 22.
[1700] Siu. *The Tao of Science: An Essay on Western Knowledge and Eastern Wisdom*. p. 75.
[1701] Ibid. pp. 76–77, 79.

Only after that ineffable union is affected is an attempt made to transfigure it into a conscious and rational analogue. Current rational knowledge is then tested for adaptability; new, conscious forms of expressions are developed; or the indescribable is left unmentioned. The capacity to realize these difficult syntheses is a rare endowment, and this is why creative genius comes seldom.[1702]

Sui feels that students should be taught to "sense the undifferentiated" through the education of feeling that transcends language and the "extension of the student's awareness into the 'suchness of nature.'" Knowing through no-knowledge leads to wisdom, which Sui defines as "the artful way in which rational knowledge, intuitive knowledge, and no-knowledge are mastered, handled, integrated and applied."[1703] Thus, these non-rational forms of learning can be fostered and encouraged in our educational systems.

15.1.3 Construction of ignorance

- *All the things of which people are aware they do not know (the most recognized form of ignorance)*
- *All the things people think they know but do not (ignorance based on error)*
- *All the things of which people are not aware that they do not know (ignorance-squared)*

While Smithson's taxonomy of ignorance is helpful in identifying different *types* of ignorance, it is also helpful in revealing the different *processes* and *ways* in which ignorance is constructed. This is important in developing curricula for an educated populace, as the effectiveness of learning processes in producing desired learning and social outcomes is as important as the knowledge outcomes themselves. Here we look briefly at three of Smithson's six categories with the view that if we can understand how ignorance is constructed, then we can also gain insight into the processes of effective learning.

According to Fjelland, mainstream contemporary science has generally been concerned with the pursuit of certainty, or truth.[1704] The mainstream view is that uncertainty can be controlled through theory or statistics. Ravetz argues that research that employs quantitative inputs and mathematical arguments is often acceptable as scientific "even if it is totally nonsensical," and "fields of inquiry that have severe uncertainty are dismissed as worthless."[1705] However, according to Abbott and Ryan, a crisis of confidence in science is occurring, influenced, in part, by severe ecological challenges and disasters

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[1702] Ibid. p. 78.
[1703] Ibid. p. 84.
[1704] Fjelland, Ragnar. "Facing the Problem of Uncertainty," *Journal of Agricultural and Environmental Ethics*, vol. 15, no. 2, 2002: 155-169.
[1705] Ravetz. "The Post-Normal Science of Precaution." p. 6.

such as climate change and the Chernobyl nuclear disaster, which are in turn related to technological progress. This crisis shifts the perception of science as a discipline concerned with the empirical pursuit of truth and objectivity to one that sees science as constructed of uncertain theories with no stable basis and no inherent means of societal control.[1706]

Bouissac sees the resulting debate as more than an epistemological exercise considering the severity of the present situation. Questions revolving around the practices of science, he believes:

> … become all the more pressing in times of scarcity now that the scientific institutions specializing in the production of knowledge have developed close associations with military and economic power structures; contemporary society cannot afford to make hasty decisions because the stakes are so high that acting lightly in such matter amounts to playing Russian roulette.[1707]

Bouissac remarks, however, that this uncertainty or "form of constructed ignorance" does not dismiss the value of scientific pursuit, since the information generated in this pursuit often makes a beneficial difference to society, and, therefore, is worth pursuing. He argues instead that academic disciplines should be seen as "generators of uncertainty," rather than as transmitters of completed knowledge, and that these disciplines could be compared with each other from this point of view:

> A discipline which would fail to generate information, i.e. which would have exhausted its capacity to construct ignorance, would quickly disappear. The necessary dynamic must come from the construction of a relatively determined lack of knowledge.[1708]

Sheldon Ungar, of the University of Toronto at Scarborough, describes another kind of construction of ignorance that is structurally based, arguing that "the knowledge economy militates against a broader knowledge society."[1709] His premise is that the knowledge economy demands intense specialization and thereby creates "informational pressures," which in turn increase general ignorance and create knowledge "deficits." Information overload, he contends, leads to a "reading reluctance" in both experts and lay people. Ungar notes that most of the proliferation of scientific and technical knowledge is used by experts involved in specialized occupational roles, and he argues that the growth of specialized knowledge implies a simultaneous growth in ignorance, which he calls the "knowledge-ignorance paradox (KIP)."[1710]

[1706] Abbott, and Ryan. *The Unfinished Revolution: Ignorance, Interests, Ideology and What We Can Do About It*.

[1707] Bouissac. "The Construction of Ignorance and the Evolution of Knowledge." p. 2.

[1708] Ibid. p. 7.

[1709] Ungar, Sheldon. "Stumpted by Headlines: Investigating a Functional Knowledge Deficit," *The Canadian Journal of Higher Education*, vol. XXXII, no. 3, 2002: 29-48. p. 44.

[1710] Ibid.

According to Ungar, researchers in the area of the "knowledge gap" find that, in order to understand new knowledge in an area, prior knowledge of that area is critical. Therefore, non-specialists are not able to keep up and are, ipso facto, excluded from potentially valuable critical commentary on developments in that field. Experts as well can no longer keep up with the proliferation of new knowledge. Their response is to further constrict the defined areas of specialization, which, in effect, reduces the number of people who have access to the knowledge and reduces the knowledge of experts in domains other than their own. In this way, increasingly narrow specializations effectively limit knowledge and propagate broader societal ignorance and exclusion from understanding of areas that directly affect their lives.

The sixth component of Smithson's taxonomy of ignorance is what Thompson calls "ignorance-squared," by which he means the production of ignorance through a lack of broader awareness.[1711] In this case, Thompson argues, professionals literally do not want to know what it is that they do not know because this acknowledgement would threaten their control of knowledge in their supposed field of expertise. Speaking of mainstream economics, he asserts this production of ignorance is accomplished through "narrow pedagogy, delineation of research parameters, and by constraining the production and presentation of non-neoclassical knowledge." He continues:

> Training in textbook economics and economic research systematically fosters ignorance-squared, in that students and researchers are shielded from any acquaintance with problems outside the domain of successful puzzle solving. The curriculum is always crowded with the positive heuristic of neoclassical economics; there is always too much to teach. There is never time for reflection, for perspective, for the cultivation of awareness, and most importantly, for the presentation of other contentious viewpoints, much less for the knowledge produced outside the disciplinary boundaries. When neoclassical economists restrict their own discourse, as well as their students' ability to engage with others of the same, or related specialties, then 'ignorance-squared' […] is enhanced.[1712]

Conventional economics, as taught in most Western textbooks, schools and universities, is largely based on a traditional construct that sees the economy as a closed system in which firms produce and households consume. That narrow market-based construct is seriously flawed in failing both to acknowledge households as unpaid producers and the economy as a sub-system of broader and encompassing social and ecological systems. According to Thompson, such broader views of economic structures and functions are simply excluded from the discipline of mainstream economics, as conventionally defined.

Science historian Robert Proctor is also concerned with what does *not* get studied. He argues that social forces contribute to the exclusion of key areas of knowledge, including

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[1711] Thompson. "Ignorance and Ideological Hegemony: A Critique of Neoclassical Economics."
[1712] Ibid. p. 292.

the absence or neglect of interested parties, failures to fund particular areas of study, and censorship.[1713] For example, the research priority of studying biological cancer treatments and the enormous amount of money used to fund cancer research ignores the social causes of cancer that society might work to prevent. This neglect is due partly to the fact that cancer prevention research would require unwanted changes in personal lifestyle, politics, and the business sector.

There is also discussion in the literature on the construction of ignorance of the relevance of certain types of knowledge changing over time. We no longer require students to learn Latin, for example, and there is no longer any need for laypeople to learn Fortran computer language. Ungar, describing what he calls a "functional knowledge deficit," also points out that professors can fall into the trap of comparing illiteracies, "declaring my (high!) culture is better than yours," and furthermore, "my culture is good for you even if you don't like it."[1714]

Historians often decry the lack of historical knowledge among the public, especially in the United States, as revealed by frequent historical knowledge surveys.[1715] Kearl, for example, discusses the social construction of history, which depends on collective human memory. Research finds that social consensus is created through the cultural transmission of historical stories, religious observances, political commemorative rituals, tradition, and school history texts. These stories, according to Kearl, preferentially remember ancestors who demonstrate social ideals, promote contemporary causes, or provide benchmarks for self-understanding. Acknowledging the "sacrifices of past generations," is thought to create a sense of obligation to future generations. In addition, Kearl notes that the elite uses the past in ways to legitimate their power and, thus, create "generation gaps." Kearl argues:

> Just as people can accept false autobiographical memories that are consistent with their present self theories, the memories of social orders are not reproductions of the past but rather revisionist constructions of how they are likely to act given current ideology. This is not to imply that the reconstruction of the past is pure fantasy; it is the meaning given to its irrevocable evidence that changes. The defining events that we think are important are the incidents that will be remembered and these form a kind of coagulant around which other events are recalled, organized and given meaning,[1716]

This "crisis in historical thinking" has consequences in the present and for the future. Kearl conducted a small-scale survey to investigate the correlation between historical

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[1713] Proctor, R.N. *Cancer Wars: How Politics Shapes What We Know and Don't Know About Cancer*, New York: Basic Books, 1995. p. 13. cited in Stocking. "On Drawing Attention to Ignorance."

[1714] Ungar. "Stumpted by Headlines: Investigating a Functional Knowledge Deficit." p. 32.

[1715] Kearl, Michael C. *An Investigation into Collective Historical Knowledge and Implications of Its Ignorance*, San Antonio, Texas, Trinity University, 2001; accessed December 2005; available from http://www.trinity.edu/departments/soc_anthro/CollectiveHistory-Kearl 2001.pdf.

[1716] Ibid., accessed. p. 2.

knowledge and present values. The survey had 200 undergraduate students place world events on a time line and found historical ignorance to be considerable. For example:

> [W]e found the Russian Revolution occurring in 1970, the first atomic device detonated in 1915, manumission of American slaves occurring as early as 1830 and as late as 1910, the Peoples Republic of China coming into existence in 1790 and 1880 and Israel in 1810, the Napoleonic war preceding the French Revolution and occurring as recently as the 1880s, Darwin writing in the 18th century, and American women receiving the right to vote as early as 1810. The mean […] score of the order of events was .56 with a standard deviation of .316. The mean of the total number of decades individuals were off in their placements of events (with the maximum being capped at 100) was 46.9 with a standard deviation of 25.2 decades.[1717]

The degree of response error and of bias correlated with the opinion that the elderly have nothing relevant to teach the younger generations. Kearl notes: "In fact, of all of the measures considered, it was this variable that produced the greatest number of significant correlations."[1718] For instance, when compared with those who strongly disagreed with the statement that the old have little of relevance to teach the young:

- Those who disagreed somewhat were 44 percent more likely and those who agreed were over twice as likely to believe that there once was an era in American politics when there was relatively no disagreement on major issues compared to those who strongly disagreed that the old have little of relevance to teach the young
- Those who disagreed somewhat were 2.4 times more likely and those who agreed were 2.9 times more likely to agree that the U.S. is weakened when the Third World prospers
- Those who agreed were more than one-third more likely to believe that divisive elements need to be located and eliminated or our society risks disintegration[1719]

In conclusion, Kearl asks if society can cope with collective memories "interwoven with authoritarianism and utopian thinking."

> Given America's absorption into the world system, can we afford too many individuals believing that America suffers when developing nations prosper? Given the moral relativism and multiculturalist ethos of our times, can we cope with too many individuals believing that their society will disintegrate unless its divisive elements are located and eliminated—the same folks who surmise that there really are simple solutions to many of our problems? Such are the features

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[1717] Ibid., accessed. p. 4.
[1718] Ibid., accessed. p. 5.
[1719] Ibid., accessed. p. 5.

of the worldview of those failing to understand the order and timing of historical events.[1720]

In sum, Kearl's survey findings indicate that the social construction of ignorance can have serious social and political consequences—learning outcomes are related to major social and economic outcomes. It is therefore important that educational curricula develop critical minds capable of realizing that negative types of ignorance that are constructed through lack of awareness can have serious negative effects on society.

15.2 The precautionary principle: an approach to the governmental assessment of uncertainty

According to Arthur Petersen, the result of the understanding that "science cannot speak truth to power" is the fact that policy makers must also accept uncertainty when making decisions.[1721] One response by governments is the implementation of the "precautionary principle."[1722] UNESCO defines the precautionary principle briefly in a 2005 report as "an anticipatory model to protect humans and the environment against uncertain risks of human action."[1723] According to Ravetz, a governmental precautionary approach that addresses issues where uncertainty, disputed values, and the magnitude of consequences are high will ideally focus on the quality of processes rather than on outcomes of certainty.[1724] Devised to counteract the trend in industrialized science to assume that all innovations are safe unless proven dangerous, this precautionary approach is in the early stages of development.[1725]

From the perspective of the key themes in this chapter, the trend towards using the precautionary principle constitutes a significant step towards creation of a more positive and "connected" learning environment, which in turn creates a more conducive atmosphere for openness and learning. We look more specifically at the Canadian application of the precautionary principle in the literacies section. Here, we briefly

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[1720] Ibid., accessed. p. 6.

[1721] Petersen, Arthur C. "The Precautionary Principle, Knowledge Uncertainty, and Environmental Assessment," in *Management of Uncertainty in Science for suSTainability (MUST)*, ed. Sluijs, Jeroen van der, 80-92. Utrecht, Netherlands: Copernicus Institute, Research Institute for Sustainable Development and Innovation, Utrecht University, 2002.

[1722] Ravetz. "The Post-Normal Science of Precaution."

[1723] World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) Expert Group. *The Precautionary Principle*, Paris, UNESCO, 2005; accessed December 2005; available from http://unesdoc.unesco.org/images/0013/001395/139578e.pdf.

[1724] Ravetz. "The Post-Normal Science of Precaution."

[1725] Boudourides, Moses A. "Participation under Uncertainty." Paper presented at the Conference VALDOR 2003: Values in Decisions on Risk, Stockholm, Sweden, June, 9-13, 2003; accessed December 2005; available from http://www.math.upatras.gr/~mboudour/articles/puu.pdf.

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describe it as a governmental response to dealing with uncertainty in regulation assessments.

According to Burgess, this principle, also called the "post-normal style of problem solving," is used in the new "post-normal science."[1726] Post-normal science attempts to deal directly with complex interactions in the natural world, and therefore does not depend on the usual isolated methods of science as practiced in the laboratory. It also must deal with social, economic, and political synergies. Burgess argues that post-normal science recognizes heterogeneity in social groups, pluralism of values, and multiple knowledges,[1727] and, according to Ravetz and Funtowicz, injects ethical and spiritual considerations into policy debates.[1728] As Ravetz notes: "The great lesson of post-normal science is that the quality of results does not depend on the elimination of uncertainty. Rather, the skilled management of uncertainty, along with the recognition of decision stakes, is the key to quality, especially in the precautionary fields."[1729]

There are various typologies for classifying the dimensions of uncertainty that need to be considered in guiding the assessment practices by policy-makers. What these typologies have in common is that they attempt to assess the crucial nexus between learning outcomes on the one hand and policy outcomes on the other. In this case, it is posited that a greater acceptance of uncertainty in learning and in the state of knowledge should be reflected in more explicit acceptance of the precautionary principle in decision-making. Peterson, for example, makes a distinction between risk, uncertainty, and ignorance both in the state of knowledge and in the way this knowledge can guide policy, as shown in Table 14 below.

[1726] Burgess, Jacquelin. "Situating Knowledges, Sharing Values and Reaching Collective Decisions: The Cultural Turn in Environmental Decision-Making," in *Management of Uncertainty in Science for suSTainability (MUST)*, ed. van der Sluijs, Jeroen, 43-51. Utrecht, Netherlands: Copernicus Institute, Research Institute for Sustainable Development and Innovation, Utrecht University; accessed December 2005; available from http://www.copernicus.uu.nl/downloads/mustbook.pdf, 2002.
[1727] Ibid.
[1728] Ravetz, Jerome, and Silvio Funtowicz. "Editorial Post-Normal Science - an Insight Now Maturing," *Futures*, vol. 31, no. Sept, 1999: 641-646. p. 642.
[1729] Ravetz. "The Post-Normal Science of Precaution." p. 6.

Table 14. Uncertainty and precaution—toward a clarification of the terms

Situation	State and dates of knowledge	Examples of action
Risk	'Known' impacts; 'known probabilities,' e.g., asbestos causing respiratory disease, lung and mesothelioma cancer, 1965 to present	**Prevention**: action taken to reduce known risks, e.g., eliminate exposure to asbestos dust
Uncertainty	'Known' impacts; 'unknown' probabilities, e.g., antibiotics in animal feed and associated human resistance to those antibiotics, 1969 to present	**Precautionary prevention**: action taken to reduce potential hazards, e.g., reduce / eliminate human exposure to antibiotics in animal feed
Ignorance	'Unknown' impacts and therefore 'unknown' probabilities, e.g., the 'surprises' of chlorofluorocarbons (CFCs) and ozone layer damage prior to 1974; asbestos mesothelioma cancer prior to 1959	**Precaution**: action to anticipate, identify and reduce the impact of 'surprises,' e.g., use of properties of chemicals such as persistence or bioaccumulation as 'predictors' of potential harm; use of the broadest possible sources of information, including long-term monitoring; promotion of robust, diverse and adaptable technologies and social arrangements to meet needs, with fewer technological 'monopolies' such as asbestos and CFCs

Source: Petersen, Arthur C. "The Precautionary Principle, Knowledge Uncertainty, and Environmental Assessment." In *Management of Uncertainty in Science for Sustainability (MUST)*, edited by Jeroen van der Sluijs, 80-92. Utrecht, Netherlands: Copernicus Institute, Research Institute for Sustainable Development and Innovation, Utrecht University, 2002; adapted from European Environment Agency (EEA), "Late Lessons from Early Warnings: The Precautionary Principle 1896–2000."

Peter Janssen, et al. in the Netherlands classify uncertainty in knowledge using five dimensions that must all be taken into consideration when making assessments:

1. the location of the uncertainties (where they occur, i.e., context, expert judgment, within the model, data, or outputs)
2. their level (where uncertainty manifests itself on the gradual spectrum between deterministic knowledge and total ignorance)
3. their nature (whether uncertainty primarily stems from knowledge imperfection (epistemic uncertainty) or is a direct consequence of inherent variability / stochasticity)
4. the qualification of knowledge (refers to the level of underpinning and backing of the information, e.g., data, theories, models, methods, argumentation etc., involved in the assessment of the problem)

5. the value-ladenness of choices (refers to the inevitable presence of values and biases in the various choices and assumptions involved in all learning and research processes. This concerns choices and assumptions regarding the way the scientific questions are framed, data are selected, interpreted and rejected, methodologies and models are devised and used, explanations and conclusions are formulated, etc.)[1730]

The challenge for indicator practitioners is to ensure that new indicators and assessments of progress in education account for this crucial perspective, which is currently not reflected at all in conventional education indicators.

15.3 Problems with quality of information: lack of clarity, confusion, and disinformation

A great deal of our human problems arise not so much from what we know—but from what we know that isn't so.[1731]

Milton Dawes

David Shenk argues that the *quality* of much of the information available in the public domain is questionable since a great deal of it is composed of irrelevant, unclear, and erroneous data fragments, which he labels "data smog."[1732] According to Shenk, much of this information comes unsolicited from the Internet, but it also reaches the public through the mass media—television, articles, reports, newspapers, etc. The quality of "expert" knowledge has also been questioned. Ho and Tang quote a *New York Times* science journalist, William J. Board, who writes that "the number of scientific articles and journals published worldwide is starting to confuse research, overwhelm the quality control systems of science, encourage fraud, and distort the dissemination of important findings."[1733]

[1730] Janssen, Peter H.M., Arthur C. Petersen, Jeroen P. van der Sluijs, James S. Risbey, and Jerome R. Ravetz. "Towards Guidance in Assessing and Communicating Uncertainties." Paper presented at the 4th International Conference on Sensitivity Analysis of Model Output (SAMO 2004), Santa Fe, New Mexico, March 8-11, 2005; accessed December 2005; available from http://library.lanl.gov/cgi-bin/getdoc?event=SAMO2004&document=samo04-61.pdf. p. 208.

[1731] Dawes. *Down to Earth Epistemology*, accessed.

[1732] Shenk, David. *Data Smog: Surviving the Information Glut*, San Francisco: Harper, 1997.

[1733] Board, William J. cited in Ho, Jinwon, and Rong Tang. "Towards an Optimal Resolution to Information Overload: An Infomediary Approach." Paper presented at the ACM (Association for Computing Machinery) 2001 International Conference on Supporting Group Work, 2001, Proceedings, 91-96; accessed December 2005; available from http://portal.acm.org/ft_gateway.cfm?id=500302&type=pdf. p. 93.

Ho and Tang note that it is often difficult to distinguish between good and poor quality information from the large quantity of information available.[1734] It takes time, energy, skill, and experience to weed out the irrelevant, redundant, and low quality information from the vast amount of available information from which to choose. The following section mainly consists of a few examples of different types of poor quality information in areas such as contrived information, misinformation, propaganda, censorship, and bias, primarily in news reporting, rather than a full literature review of quality issues in knowledge transmission. Our intention here is simply to give a flavour of the wide array of problems concerning the quality of information available to the public, since this directly affects how the public forms its knowledge of important issues. With both the Eastern and Western public getting much of their information from global Internet sources, the ability to distinguish between good and poor quality information is important to both, in order to identify, assess, and evaluate information effectively

15.3.1 Public conditioning and contrived information: The science of creating public opinion

Tim O'Shea argues that much of the public knowledge that is considered conventional wisdom is actually contrived by the public relations cartel, which means that someone or some organization or industry may have paid billions of dollars to have the information propagated.[1735] According to O'Shea, examples of these "illusions" include statements and views like the following:

- Pharmaceuticals restore health
- Vaccination brings immunity
- The cure for cancer is just around the corner
- When a child is sick, he needs immediate antibiotics
- When a child has a fever he needs Tylenol
- Hospitals are safe and clean[1736]

In their recent book, *Trust Us, We're Experts: How Industry Manipulates Science and Gambles with Your Future*, Rampton and Stauber ascribe the origins of public opinion creation in America as beginning in the 1920s, with the work of Edward L. Bernays, whose most notable books include *Crystallizing Public Opinion*, *The Engineering of Consent*, and *Propaganda*.[1737] According to Rampton and Stauber, Bernays, called the 'Father of Spin', "used psychological techniques to *mask* the motives of his clients, as part of a deliberate strategy aimed at keeping the pubic *un*conscious of the forces that

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[1734] Ibid.
[1735] O'Shea, Tim. *The Doors of Perception: Why Americans Will Believe Almost Anything*, Mercola, 2001; accessed December 2005; available from http://www.mercola.com/2001/aug/15/perception.htm.
[1736] Ibid., accessed.
[1737] Rampton, Sheldon, and John Stauber. *Trust Us, We're Experts: How Industry Manipulates Science and Gambles with Your Future*, New York: Tarcher/Penguin, 2001.

were working to mold their minds."[1738]

Bernays created public perceptions about hundreds of products or ideas, such as the positive public perception of women smoking cigarettes, and the idea of eating bacon for breakfast. For example, he organized the Torches of Liberty Brigade in the 1929 Easter Parade in New York City, in which suffragettes marched in the parade smoking cigarettes as a mark of women's liberation. Also, working with the American Medical Association to set up an advertising format,[1739, 1740, 1741] Bernays helped fashion the perception that cigarettes are beneficial to health. Rampton and Stauber also note:

> He helped jump-start sales of bacon, a breakfast rarity until the 1920s, by enlisting a prominent doctor to solicit fellow doctors' opinions on the salutary benefits of a hearty breakfast and by arranging to have famous figures photographed eating breakfasts of bacon and eggs.[1742]

Bernays clients included Philip Morris, Boeing, General Mills, Pfizer, Monsanto, DuPont, General Motors, Procter & Gamble, and Dow Chemical, among hundreds of others. He formed positive public opinions on issues that had commercial value or needed "damage control" such as those related to pharmaceutical drugs, household cleaning products, dioxin, leaded gasoline, cancer research and treatment, and the use of forests for lumber, as well as using celebrities to promote products.

[1738] Ibid.

[1739] In the 1930's, medical journals were already publishing studies associating smoking with lung cancer. At that time, cigarette manufacturer Phillip Morris was the *Journal of the American Medical Association*'s (JAMA) largest advertiser. Fraser, Jessica. *What the American Medical Association Hopes You Never Learn About Its True History*, News Target.com, 2005; accessed September 2006; available from http://www.newstarget.com/008845.html.

[1740] "The *Journal of the American Medical Association* (JAMA), 'after careful consideration of the extent to which cigarettes were used by physicians in practice,' began accepting tobacco advertisements and money in 1933. In 1948, JAMA argued "more can be said in behalf of smoking as a form of escape from tension than against it […]… there does not seem to be any preponderance of evidence that would indicate the abolition of the use of tobacco as a substance contrary to the public health.'" Tobacco Timeline. accessed September 2006; available from http://www.tobacco.org. cited in Null, Gary, Carolyn Dean, Martin Feldman, Debora Rasio, and Dorothy Smith. *Death by Medicine*, e-Healthy News, 2003; accessed September 2006; available from http://www.mercola.com/display/router.aspx?docid=30236. p. 25.

[1741] "Scientists used the excuse that there were never enough studies revealing the dangers of DDT and other dangerous pesticides to ban them. They also used this excuse around the issue of tobacco, claiming that more studies were needed before they could be certain that tobacco really caused lung cancer. Even the American Medical Association (AMA) was complicit in suppressing results of tobacco research. In 1964, the Surgeon General's report condemned smoking, however the AMA refused to endorse it. What was their reason? They needed more research. Actually what they really wanted was more money and they got it from a consortium of tobacco companies who paid the AMA $18 million over the next nine years, during which the AMA said nothing about the dangers of smoking." Weiner, J. "Smoking and Cancer: The Cigarette Papers: How the Industry Is Trying to Smoke Us All," *The Nation*, vol. January 1, 1996: 11-18. cited in Null, Dean, Feldman, Rasio, and Smith. *Death by Medicine*, accessed. p. 25.

[1742] Rampton, and John Stauber. *Trust Us, We're Experts: How Industry Manipulates Science and Gambles with Your Future*. p. 45.

According to O'Shea, the case of leaded gasoline provides an example of generated and contrived public opinion. In 1922, General Motors (GM) discovered that adding lead to gasoline increased the "horsepower" of cars.[1743] When safety concerns were expressed, GM paid the Bureau of Mines to provide research that proved the inhalation of lead was harmless. Charles Kettering, an executive with GM and co-founder of the Sloan-Kettering Institute for medical research, was behind the Institute's opposition to anti-lead research. The Institute produced reports that showed how lead occurs naturally in the body and that the body could eliminate it. With no official scientific opposition, by the 1970s, 90% of the gasoline sold in the United States was leaded. It took over 60 years for the knowledge that leaded gasoline was a major health problem[1744] and carcinogen[1745, 1746] to reach the state where it could no longer be hidden, and leaded gasoline was finally phased out in the late 1980s. During those 60 years, an estimated 30 million tons of lead were released as vapour into the air.[1747]

Bernays' rationale for constructing and moulding public opinion was that decisions should be left in the hands of experts, who are needed to control chaos, since the masses

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[1743] O'Shea. *The Doors of Perception: Why Americans Will Believe Almost Anything*, accessed.

[1744] "Lead is a very toxic element, causing a variety of effects at low dose levels. Brain damage, kidney damage, and gastrointestinal distress are seen from acute (short-term) exposure to high levels of lead in humans. Chronic (long-term) exposure to lead in humans results in effects on the blood, central nervous system (CNS), blood pressure, kidneys, and Vitamin D metabolism. Children are particularly sensitive to the chronic effects of lead, with slowed cognitive development, reduced growth and other effects reported. Reproductive effects, such as decreased sperm count in men and spontaneous abortions in women, have been associated with high lead exposure. The developing fetus is at particular risk from maternal lead exposure, with low birth weight and slowed postnatal neurobehavioral development noted. Human studies are inconclusive regarding lead exposure and cancer." (see following footnote) U.S. Environmental Protection Agency. *Lead Compounds: Hazard Summary - Created in April 1992; Revised in January 2000*, 2000; accessed September 2006; available from http://www.epa.gov/ttnatw01/hlthef/lead.html.

[1745] "Lead exposure has been associated with increased risk of lung, pharynx, stomach, and kidney cancer in diverse populations. The strongest evidence is for lung cancer. […] Recommendation: Motion: recommend that lead and lead compounds be listed as *reasonably anticipated to be human carcinogens*, based on limited evidence of the carcinogenicity in humans and sufficient evidence from laboratory animals studies. Vote on the motion: 4 yes votes to 3 no votes. The no votes were cast because the members felt that human data for lead and lead compounds was sufficient to list them as *known to be human carcinogens*." National Toxicology Program. *Review Summary NTP Executive Committee Working Group for the Report on Carcinogens (RG2)*, National Toxicology Program, National Institute of Environmental Health Services, National Institutes of Health, U.S. Department of Human Health and Services, 2003; accessed September 2006; available from http://ntp-server.niehs.nih.gov/ntp/newhomeroc/roc11/Lead_RG2Summ.pdf - search="lead carcinogen".

[1746] "People who are routinely exposed to lead on the job are 50 percent more likely to die from brain cancer than people who are not exposed. […] Published in the Sept. 1, 2006, issue of the *International Journal of Cancer*, the study computed the risk estimates for lead exposure and brain cancer from a census sample of 317,968 people who reported their occupations between 1979 and 1981. […] The new data, based on information from the U.S. Census Bureau and the National Death Index, may be the largest study ever to find a lead-cancer link." Science Daily. *Study Links Lead Exposure to Brain Cancer in Adults*, Department of Community and Preventive Medicine, University of Rochester, August 29, 2006; accessed September 2006; available from http://www.sciencedaily.com/releases/2006/08/060828211626.htm.

[1747] O'Shea. *The Doors of Perception: Why Americans Will Believe Almost Anything*, accessed.

are driven by emotional appeals and are incapable of rational thought. Rampton and Stauber quote Bernays as saying:

> We are governed, our minds molded, our tastes formed, our ideas suggested largely by men we have never heard of […]. In almost every act of our lives whether in the sphere of politics or business in our social conduct or our ethical thinking, we are dominated by the relatively small number of persons who understand the mental processes and social patterns of the masses. It is they who pull the wires that control the public mind […]. If we understand the mechanism and motives of the group mind […] it would be possible to control and regiment the masses according to our will without their knowing it […]. Theory and practice have combined with sufficient success to permit us to know that in certain cases we can effect some change in public opinion with a fair degree of accuracy by operating a certain mechanism, just as the motorist can regulate the speed of his car by manipulating the flow of gasoline […].[1748]

Bernays and his cohorts developed certain principles or mechanisms to control the public mind, which are still used today.

- *Create credibility for a product or an image through "independent third-party" endorsement*. Bernays helped found institutions that could contribute endorsements of corporate products and activities, such as the Manhattan Institute, Consumer Alert, The Advancement of Sound Science Coalition, Center for Produce Quality, American Council on Science and Health, and the Global Climate Coalition, among many others. In 1938, the Institute for Progaganda Analysis stated: "Mr Bernays has […] created more institutes, funds, institutions, and foundations than Rockefeller, Carnegie, and Filene together."[1749]
- *Create news releases that can be used intact with little editing and mixed in with legitimately researched stories so that the public cannot tell the difference*. This is especially the case with new breakthrough scientific innovations.
- *Focus on emotion rather than facts*; motivation should be based on presentation rather than logic; create positive images and stay away from substance; speak in generalities using positive words and point out benefits.
- *Never state a lie that can be substantiated, and dehumanize the attacked party by labeling and name calling*.
- *Use celebrities, sports figures, churches and anyone who has no actual expertise on the issue to promote it.*[1750]

[1748] Bernays, Edward L. *Propaganda*, New York: Horace Liveright, 1928. pp. 9, 47–48, cited in Sheldon Rampton, and John Stauber. *Trust Us, We're Experts: How Industry Manipulates Science and Gambles with Your Future*., pp. 42, 44.

[1749] Institute for Progaganda Analysis. "The Public Relations Counsel and Progaganda." *Propaganda Analysis*, August, 1938. p. 62, cited in Rampton, and John Stauber. *Trust Us, We're Experts: How Industry Manipulates Science and Gambles with Your Future*. p. 45.

[1750] O'Shea. *The Doors of Perception: Why Americans Will Believe Almost Anything*, accessed.

In sum, it is important that an education system considers *how* the public is educated, where it gets its informal knowledge and information from, the degree to which unsubstantiated information holds sway, and the degree to which the public is capable of distinguishing fact from fiction. Since formative influences on public information, perceptions, knowledge, and action are extremely important contributors to informal learning in the populace, curricula designed to develop critical thinking skills that can discern the quality of information could lead to a more educated populace.

As well, understanding the manipulation of public opinion as described above is crucial in delineating and tracking the complex relationships between learning outcomes and social outcomes, since the methods described are designed to influence actual behaviour, including spending patterns and health behaviours. Thus, since education systems are concerned with the impact of learning on economic, health, and social outcomes, they must attempt to address and assess the degree to which contrived and unsubstantiated opinions hold sway in the public arena.

15.3.2 Misinformation/ disinformation

If public opinion can be manipulated with the ease described by Rampton and Stauber, and as typified by Bernays' successes, then it is clear that much of the information that reaches the public in North America contains misinformation or disinformation, which slants issues toward particular biases. In other words, misinformation and disinformation can be considered outcomes of the *processes* of manipulation illustrated in the previous section.

The terms "misinformation" and "disinformation" are often used interchangeably, but a distinction is also made between the two:

> Misinformation is information that is incorrect, but not because of a deliberate attempt to mislead. Believers in misinformation are said to be misinformed but not lying. It is commonly confused with disinformation. The spreading of *dis*information is a purposeful attempt to spread a known falsehood, whereas *mis*information is the result of ignorance.[1751]

Disinformation is designed "to manipulate the audience at the rational level by either discrediting conflicting information or supporting false conclusions."[1752] It similar to and often not distinguished from propaganda, though the latter is designed to engage the emotions rather than the intellect.

[1751] Wikipedia. *Misinformation*, 2005; accessed December 2005; available from http://en.wikipedia.org/wiki/Misinformation.
[1752] Wikipedia. *Disinformation*, 2005; accessed December 2005; available from http://en.wikipedia.org/wiki/Disinformation.

The Halifax International Symposium on Media and Disinformation, held at Dalhousie University in July 2004, identified disinformation as "the manipulation of information, the invention of pretexts, the falsification of reality," which turns people "against their own interests."[1753] In its promotional literature, the Symposium also distinguished disinformation from simple *mis*information since the former relies, in part, on deliberately mystifying situations by not providing contextual information. For example, the Symposium statement noted that:

> [P]eople simply are not able to understand the Palestinian crisis as anything other that an 'ethnic clash', because they are not provided with information about the whole reality. They are not provided with the context needed to come to any other conclusion than the pre-determined one: a hopeless 'cycle of violence'.[1754]

Paul Pekin, writing for *Fairness & Accuracy in Reporting*, gives an interesting example of the subtle distinction between misinformation and disinformation, which may actually depend on one's perspective and point of view.[1755] The example comes from a 1997 issue of *U.S. News and World Report* that published a critique, written by John Leo, of educational practices taking place in universities.[1756] Pekin especially was concerned with "right-wing myths" and the distortion of facts in Leo's critique, but he did not disagree with Leo's contention that basic literacy skills are important for students. Pekin argues that anecdotes about educational failures come regularly from "big conservative think tanks where right-wing policy is made." He contends that, like Leo's critique, books such as *Back to Basics, Slouching Toward Gomorrah, The Limits of Social Policy,* and *Values Matter* fall into this category and generally attack affirmative action, radical feminism, political correctness, multiculturalism, and various liberal and progressive approaches and views under the guise of critiquing educational failures.

The critique by Leo begins with quotes from a report released by the Mackinac Center for Public Policy, which, according to Leo, is one of "a long line of depressing reports on the condition of our colleges," and the state of the schools in the United States. For quality improvements to happen, these reports often argue that schools and colleges need to be privatized. Pekin notes that Leo's "long line of depressing reports" mostly come from a small group of ideologically and often financially related sources. The Mackinac Center for Public Policy turns out to be a right-wing think tank and champion of school vouchers and privatization. As well, quoted sources in the article, such as those from the National Association of Scholars, *Public Interest*, and Heather MacDonald, are associated with and receive funds from the right-wing, neoconservative John Olin Foundation, promoter

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[1753] Halifax International Symposium on Media and Disinformation. *An Invitation to Participate*, 2004; accessed December 2005; available from http://halifaxsymposium.ca/invitation.html.
[1754] Ibid., accessed.
[1755] Pekin, Paul. *Schoolhouse Crock: Right-Wing Myths Behind the "New Stupidity"*, Fairness & Accuracy In Reporting, 1998; accessed December 2005; available from http://www.fair.org/index.php?page=1413.
[1756] Leo, John. "The Answer Is 45 Cents." *U.S. News & World Report*, April 21, 1997, 15.

of books as Dinesh D'Souza's *Illiberal Education* and Allan Bloom's *The Closing of the American Mind*, which are highly critical of public education and school performance.

The Leo article argues that university students are being taught that standards are not important, and the result is that students get "tangled up with radical politics and the multicultural makeover of the colleges," and are left unprepared to enter the work force. Leo was particularly critical of the "process teaching school of thought." His article included the following statements:

- [T]he new stupidity shows up in college writing classes. The [Mackinac] report finds that the 'process' school of composition dominates freshman writing classes at state institutions. According to this school of thought, writing is a continuous process with much rewriting, growth, and self-discovery. So far so good. But embedded in the theory is the notion that standards, grammar, grades, and judgment are bad. Self-expression, self-esteem, and personal rules are good.
- Writing in the *Public Interest,* Heather MacDonald reports that 'students who have been told in their writing class to let their deepest selves loose on the page and not worry about syntax, logic, or form have trouble adjusting to their other classes'—the ones in which evidence and analysis are more important than personal revelation or feelings.
- MacDonald states, 'American employers regard the nation's educational system as an irrelevance, according to a Census Bureau survey released in February 1995.'
- 'Recruiting Trends 1994–95', by Michigan State Prof. L. Patrick Scheetz, is one of umpteen studies showing how disappointed employers are by many college grads. Scheetz finds that not enough graduates have the ability to write, speak, reason, and relate to others in a satisfactory manner to hold down a job.
- [A] Department of Education study three years ago showed that more than half of American college graduates can't read a bus schedule. Exactly 56.3 percent were unable to figure out how much change they should get back after putting down $3 to pay for a 60-cent bowl of soup and a $1.95 sandwich.[1757]

Pekin points out the following discrepancies in Leo's critique, saying they are examples of "quoting from unreliable sources, snatching soundbites out of context and picking through government documents that never were meant to be used that way"[1758]:

- [P]rocess writing is nothing more than a broad range of strategies that include pre-writing activities such as defining the audience, using a variety of resources, and planning the writing, as well as drafting and revising. Moreover, the Department of Education, which so defined it, conducted a nationwide survey involving almost 40,000 fourth graders, eighth graders and high school seniors, and found that students whose teachers used process writing had the highest writing scores.

[1757] Ibid. p. 15.
[1758] Pekin. *Schoolhouse Crock: Right-Wing Myths Behind the "New Stupidity"*, accessed.

- The Census Bureau, contacted by e-mail, flatly denied that its 1995 survey, 'A Reality Check: First Findings from the EQW National Employers Survey,' showed that employers thought the nation's educational system was an irrelevance. The survey rated what employers value most in this order: attitude, communication skills, previous work experience, recommendations, years of completed education, interviews, academic performance, reputation of applicant's school, and recommendation by the applicant's teachers. To stretch this into irrelevance is to stretch the truth.
- As for L. Patrick Sheetz and that Michigan State study which showed how disappointed employers were with college grads, Professor Sheetz was easily reached by e-mail. 'Prospective employers,' he replied within an hour, 'were generally pleased with the new college graduates interviewed by their organizations on campus.'[1759]

Pekin states that, although Leo did not identify his source, there cannot be too many government sources that involve menus and bus schedules and it would appear that he is referring to the 1993 National Adult Literacy Survey (NALS). First of all, the NALS did not require respondents to simply read a bus schedule or figure change. The survey was much more complex, involving prose, document and quantitative abilities, and required adults to answer questions drawn from a facsimile bus schedule where they had to process difficult information.

The NALS was scored by rating both "tasks," with individual scores on a scale of 1 to 500 (250 being the median), and then comparing them. The difficulty level of the correct change task was 331 on the quantitative scale, and the difficulty levels of two bus schedule tasks were rated at 314 and 352, respectively, on the document scale. Average scores for university graduates were 322 for the prose scale, 314 for the document scale, and 322 for the quantitative scale. Although the average scores for each section were below the scale for one of the document questions and one of the quantitative questions, they were not below the median. Furthermore, Pekin argues: "Nor ought we assume that any given average on the overall test means the tested individual actually failed to correctly answer any individual question—and the authors of the survey specifically warn against drawing such a conclusion."[1760]

Pekin did his own informal test by asking his wife to ask her multicultural city college freshman class of over 50 students to answer the question about making change. The only student who got the answer wrong was one who had not yet mastered the English language. All of the others got it right. In conclusion, Pekin speculates: "Unless Leo has access to another Department of Education survey showing half the class bombed on that menu question, worded pretty much as he worded it, it is hard to avoid the impression

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[1759] Ibid., accessed.
[1760] Ibid., accessed. pp. 1–3.

that what we have here is one more deliberate attempt to spin the facts and advance someone's political agenda."[1761]

In short, Leo's critique of educational failures in *U.S. News and World Report,* at least according to Pekin's analysis, illustrates an example of "disinformation" in the mainstream media, since Pekin accuses Leo of a "deliberate" effort to manipulate the facts. At the same time, perspective is important, as Leo and the editors of *U.S. News and World Report* clearly would not accept this characterization and regard the article as having integrity.

This one example simply illustrates the care with which mainstream reporting must be examined and analyzed in order to assess the degree of both misinformation and disinformation in the public arena. Unfortunately, we do not currently have adequate evidence to develop an indicator for such an overall assessment. In order to properly assess the "learning environment," and indeed to assess how educated the populace is, comparative indicators of the prevasiveness of disinformation and misinformation in the public arena would be highly desirable. It should be possible to develop a research design based on analyses by a panel of experts, working according to defined criteria, which would provide such systematic data. It is not inconceivable that it will eventually be possible to score different societies comparatively according to rates of disinformation and misinformation prevalence.

15.3.3 Propaganda

Nancy Snow, Assistant Professor of Communications at the California State University, and author of *Propaganda, Inc.: Selling America's Culture to the World,* lists information that is important for the public to know about propaganda in order to identify, assess, and evaluate it effectively.[1762] Snow's definition clearly has many elements in common with the description of disinformation above, and includes the following:

- Propaganda does include information that is accurate, but the information consists of half-truths, incomplete truths, limited truths, and out of context truths.
- Education is not necessarily the best protection against propaganda, since intellectuals and 'the educated' tend to absorb the most information (including secondhand information, hearsay, rumours, and unverifiable information). Although intellectuals and the highly educated generally consider themselves above the influence of propaganda, their exposure to large quantities of questionable information actually makes them more susceptible to propaganda than those who are less educated. To say that one is free of the influence of propaganda is a sure sign of its pervasive existence in society.

[1761] Ibid., accessed. p. 2.
[1762] Snow, Nancy. "10 Things Everyone Should Know About Propaganda." *Propaganda News*, 2005, accessed December 2005; available from http://www.nancysnow.com/10things.htm.

- Propaganda thrives and exists for both ethical and unethical purposes and, therefore, cannot be looked at as strictly 'evil.'
- Propaganda seeks to modify public opinion, particularly to make people conform to the point of view of the propagandist. In this respect, any propaganda is a form of manipulation, to adapt an individual to a particular activity.
- Modern forms of communication, including mass media, are instruments of propaganda. For propaganda to thrive, the media must remain concentrated, news agencies and services must be limited, the press must be under central command, and radio, film, and television monopolies must pervade.
- Commercial appeals to the people through advertising, which plays on irrational fantasies and impulses, are some of the most pervasive forms of propaganda in existence today.[1763]

Finn from the Canadian Centre for Policy Alternatives is concerned about the "dumbing down of the public discourse" and describes the "media propaganda mill" that has been operating in the United States for the past three decades, deliberately working to shape public opinion in particular ways.[1764] He is concerned that, although this propaganda affects Canada to a lesser extent, this propaganda still misinforms the Canadian public who rely on the media for their information due to the strength of U.S. media influence in Canada.

Finn describes a report by the editor of *Harper's Magazine*, Lewis H. Lapham[1765], who offers evidence that business interests have undertaken a well thought out and financed campaign to strengthen private enterprise and "re-engineer" public opinion to that end. This group of American philanthropists purchased newspapers, journals, and other media outlets, and founded right-wing "think tank" organizations such as the Heritage Foundation, the American Enterprise Institute, the Cato Institute, the Hudson Institute, and a dozen others, and endowed them with multi-million dollar budgets. Today they spend over $300 million a year to propagate their message, which is conveyed "incessantly" through newspapers and other media such as the Wall Street Journal, the Washington Post, the Fox News television channel and MS-NBC, and Radio America. "The message is that 'all government is bad,' and that the word "public," in all its uses (public service, citizenship, public health, community, public school, etc.) connotes inefficiency and waste."[1766]

Again, due to the subtlety of the necessary analysis, it is not yet possible to establish the pervasiveness of propaganda in Canadian society compared to other societies, though such an assessment is highly desirable to understand both the state of the learning

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[1763] Ibid.
[1764] Finn, Ed. "How to Brainwash a Population." *The CCPA Monitor*, Canadian Centre for Polity Alternatives, November, 2004, accessed December 2005; available from http://www.policyalternatives.ca/index.cfm?act=news&do=Article&call=959&pA=bb736455&type=2,3,4, 5,6,7.
[1765] Lapham, Lewis H. "Tentacles of Rage." *Harper's Magazine*, September, 2004, 31-42.
[1766] Finn. "How to Brainwash a Population."

environment and the influences on and determinants of an educated populace. Efforts should be made in coming years to define propaganda carefully and to develop systematic assessment tools of its pervasiveness in the media, advertising, and other forms of communication, according to the criteria outlined by Snow and others.

15.3.4 Censorship and bias in news reporting

According to Jennifer Earl, et al., news that does not fit with the corporate agenda is often overlooked, under-reported, and even censored in the North American national news media. Earl, et al. review literature that finds selection bias—i.e., selectively reporting events—and description bias—i.e., erroneously reporting information—in news reporting.[1767] Selection bias inevitably happens because news agencies cannot report on all events that occur. However, the sample of events that newspapers choose to report is often not representative of important issues. Researchers have focused on three sets of characteristics—related to events, news agencies, and issues—which can be used to predict selection bias. Factors that influence the judgment of an event's "newsworthiness" include the proximity of the event to the news agency, the size of the event, the intensity of the event, violence at the event, and whether the event is notorious, unusual, dramatic, and / or rare. The structure of news agencies and their operational processes also affect selection through factors such as competition over newspaper space, reporting norms, and editorial concerns and biases. Issues are more likely to be reported when events reflect more general social concerns within the "issue attention cycle."[1768]

Description bias studies identify the omission of information, the misrepresentation of information, and the framing of the issue by the media, as the three main dimensions of description bias.[1769] According to Earl, et al., hard news such as the who, what, when, where, and why of the issue or event is usually fairly accurate but is subject to errors of omission, while soft news, such as impressions and inferences of journalists and commentators, is subject to multiple sources of bias. Bias is especially present when the event or issue challenges "the power of the state or the hegemony of capitalism," and the challengers are frequently disparaged as "radical" or "fringe" elements or worse.[1770] In this "corporate hegemony model," Earl, et al. argue, issues that are considered liberal or "left-wing" are often displayed in a negative light.

According to the *Campaign for Press and Broadcasting Freedom*, the news media in Canada are controlled, for the most part, by mega-corporations. The three biggest newspaper chains control 72% of daily circulation; in New Brunswick all of the daily

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[1767] Earl, Jennifer, Andrew Martin, John D. McCarthy, and Sarah A. Soule. "The Use of Newspaper Data in the Study of Collective Action," *Annual Review of Sociology*, vol. 30, 2004: 65-80. Important electronic archives are: for print media, LEXIS-NEXIS, ProQuest Historical *New York Times,* and Newslibrary, and, for broadcast media, *Vanderbilt Network News Index and Abstract.*
[1768] Ibid. pp. 69–70.
[1769] Ibid.
[1770] Ibid. p. 73.

papers are owned by the Irving family; Québec has only one small circulation independent paper; in Saskatchewan, Prince Edward Island, and Newfoundland all the daily papers are now owned by one company.[1771] The *Campaign for Press and Broadcasting Freedom* describes the media environment and reasons for public concern:

> Citizens depend upon the media to understand and evaluate public policies and social events. Ideally, the news and information we receive should help us learn about the world, debate our responses to it, and reach informed decisions about what courses of action to take.
>
> But today, profound changes are rapidly reshaping the press and broadcasting industries in Canada and abroad—changes that, if left unchecked, threaten to undermine the basic democratic right of citizens both to speak and be heard. The increasing concentration of media ownership in fewer and fewer hands, the under-funding of public service broadcasting, the emergence of trade and investment regimes that restrict the ability of nation states to enact progressive media policies, the rising commercialization of news and information, the growth of public relations and advertising, and the commercial exploitation of the new communications technology all threaten to limit the accountability of the media, the diversity of views given public expression, and the ability of citizens to access the news and information we need to participate in and make informed decisions about our social and political affairs.[1772]

The *Campaign for Press and Broadcasting Freedom* further notes that some media owners candidly express their interest in influencing news content to conform to their views and values. For example, it reports:

> Former Canadian press baron, Lord Beaverbrook [Conrad Black], told the British Royal Commission on the Press that he ran the Daily Express 'purely for propaganda and no other object.' John Bassett, former publisher of the *Toronto Telegram* was asked by a reporter if he used his newspaper to push his conservative political views. 'Of course,' replied Bassett. 'Why else would you want to own a newspaper?' When Conrad Black purchased the Jerusalem Post in 1989, he pushed the moderate newspaper to adopt a more right-wing editorial position. The editor of the Post resigned over the editorial interference and eventually 190 employees were cut from the payroll. After Black purchased the Southam newspaper chain in 1996, the editors of the Ottawa Citizen and the Montreal Gazette resigned citing 'significant differences of opinion' with the new owner.[1773]

[1771] The Campaign for Press and Broadcasting Freedom. *Campaign Statement*, 2005; accessed December 2005; available from http://www.presscampaign.org/statement.htm.
[1772] Ibid., accessed. p. 1.
[1773] Ibid., accessed. p. 2.

Project Censored is a U.S. national research group founded in 1976 and associated with Sonoma State University.[1774] Annually, it collects between 700 and 1,000 stories from journalists, scholars, librarians, and concerned citizens from around the world that were excluded from the mainstream press due to censorship, and it also tracks such news published in independent journals and newsletters. Project Censored then reviews the stories for content, reliability of sources, and significance. On that basis, the university community at Sonoma State University, including students, faculty, and community members, chooses the 25 most important stories of social significance that are based on reliable and verifiable sources, and publishes the results as the "Top 25 Censored Media Stories" of the year. Many of the stories concern the United States, but considering the influence of the U.S. on other countries, most of the stories reverberate in Canada as well.

A sample of, and quotes from, stories in Project Censored's 2004 and 2005 list that did not make the mainstream press include the following:

> **Wealth Inequality in 21st Century Threatens Economy and Democracy**: Since the late 1970s wealth inequality, while stabilizing or increasing slightly in other industrialized nations, has increased sharply and dramatically in the United States. While it is no secret that such a trend is taking place, it is rare to see a TV news program announce that the top 1% of the U.S. population now owns about a third of the wealth in the country. Discussion of this trend takes place, for the most part, behind closed doors.
>
> **Bush Administration Censors Science**: Critics charge that the Bush Administration is purging, censoring, and manipulating scientific information in order to push forward its pro-business, anti-environmental agenda. In Washington, D.C., more than 60 of the nation's top scientists, including 20 Nobel laureates, leading medical experts, and former federal agency directors, issued a statement on February 18, 2004, accusing the Bush Administration of deliberately distorting scientific results for political ends, and calling for regulatory and legislative action to restore scientific integrity to federal policymaking.
>
> Under the current administration, the Environmental Protection Agency (EPA) has blacklisted qualified scientists who pose a threat to its pro-business ideology. When a team of biologists working for the EPA indicated that there had been a violation of the 'Endangered Species Act' by the Army Corps of Engineers, the group was replaced with a 'corporate-friendly' panel.
>
> **High Levels of Uranium Found in Troops and Civilians**: Civilian populations in Afghanistan and Iraq and occupying troops have been contaminated with astounding levels of radioactive depleted and non-depleted uranium as a result of

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[1774] Project Censored. *Censored 2005: The Top 25 Censored Media Stories of 2003-2004*, 2005; accessed December 2005; available from http://www.projectcensored.org/publications/2005/.

post-9/11 United States' use of tons of uranium munitions. Researchers say surrounding countries are bound to feel the effects as well.

The Wholesale Giveaway of Our Natural Resources: The Bush Administration's environmental policies are destroying much of the environmental progress made over the past 30 years. A prime example is the Bush Administration's Clean Skies Initiative. The Clean Air Act of 1970 has made skies over most cities cleaner by cutting back pollution let out by major power companies. However, the Clean Skies Initiative allows power plants to emit more than five times more mercury, twice as much sulfur dioxide, and over one and a half times more nitrogen oxides than the Clean Air Act […]. Bush's Healthy Forests Initiative is funding projects for logging companies to gain access to old growth trees and paying them for brush clearing.

The Media Can Legally Lie: In February 2003, a Florida Court of Appeals unanimously agreed with an assertion by FOX News that there is no rule against distorting or falsifying the news in the United States.

U.S. Plans for Hemispheric Integration Include Canada (from 2005): The U.S. and Canada have been sharing national information since the creation of NORAD (North American Aerospace Defense Command) in 1958. [… T]he U.S. and Canadian commanders are proposing to expand the integration of the two countries, including cooperation in the 'Star Wars' program [and] cross-national integration of military command structures, […] under the new title of NORTHCOM, U.S. Northern Command […].

Donald Rumsfeld has stated that the U.S. Northern Command would have jurisdiction over the entire North American region. NORTHCOM's jurisdiction, as outlined by the U.S. Department of Defense (DoD), includes all of Canada, […] as well as the Canadian Artic […]. Under NORTHCOM, Canada's military command structures would be subordinated to those of the Pentagon and the DoD […].

On February 22, 2005, at the NATO summit in Brussels, Canadian Prime Minister Paul Martin declared that his people would not participate in the controversial Missile Defense Shield. Contradicting this message, Canadian Ambassador to the U.S. (and former board member of the Carlyle Group[1775]) Frank McKenna, said "We are part of it now." […] It has also been noted that Canadian military personnel are taking part in large-scale American space war games designed to prepare for combat in orbit. Under an integrated North American Command, Canada would be forced to embrace Washington's pre-emptive military doctrine,

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[1775] The Carlyle Group is the largest private equity manager in the world and the 11th largest military contractor in the United States. For more information, see Here in Reality. *Meet the Carlyle Group*, 2006; accessed July 2006; available from http://www.hereinreality.com/carlyle.html.

including the use of nuclear warheads as a means of self defence, which was ratified by the U.S. Senate in December 2003."[1776]

These excerpts from Project Censored's list of important stories not reported in the mainstream press are presented here in some detail to illustrate the degree to which key information and knowledge affecting wellbeing is missing from the public arena, thereby distorting the learning environment and undermining the potential for an educated and informed populace. The stories span many areas important to an educated populace and GNH values and principles—including culture, health, environmental quality, living standards and economic income distribution, education and knowledge, and governance. Ideally, the educated populace would understand issues of selection bias, description bias, and censorship, although it is not presently possible to quantify these conditions in a systematic and comparable way.

One indirect indicator in this area for which information is available and for which a trend over time can be developed is concentration of ownership of the Canadian press. As noted in one commentary above:

> The increasing concentration of media ownership in fewer and fewer hands […] threaten[s] to limit the accountability of the media, the diversity of views given public expression, and the ability of citizens to access the news and information we need to participate in and make informed decisions about our social and political affairs.[1777]

While less ideal than direct outcome measures of the degree and prevasiveness of bias and censorship, such an indicator of media concentration can at least point to the potential relation between reduced diversity and bias in reporting.

15.3.5 Misuse of numerical facts in media reporting

Jonathan Koomey, et al. argue that numbers that are used in policy debates are not always carefully understood, credibly documented, or accurate.[1778] They provide four detailed examples of numbers used frequently in media reports in the energy field that are either misleading or wrong. These examples include estimates of how much power is used by homes, how much power is used by office equipment, how much unreliable power costs the U.S. economy, and how much oil is likely to be found in the Arctic National Wildlife Refuge (ANWR). For each case they analyze the underlying assumptions and data used

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[1776] Project Censored. *Censored 2005: The Top 25 Censored Media Stories of 2003-2004*, accessed.

[1777] The Campaign for Press and Broadcasting Freedom. *Campaign Statement*, accessed.

[1778] Koomey, Jonathan G., Chris Calwell, Skip Laitner, Jane Thornton, Richard E. Brown, Joseph H. Eto, Carrie Webber, and Cathy Cullicott. "Sorry Wrong Number: The Use and Misuse of Numerical Facts in Analysis and Media Reporting of Energy Issues," *Annual Review of Energy and the Environment*, vol. 27, 2002: 119-158.

in the media reports, investigate the origins of numbers used in the media and how they are often misused, and analyze the premises and conclusions of the reported arguments.

The authors' first step in each case is to define the terms and boundaries because, they point out, this is the area where misunderstanding and misinterpretations most often arise. For example, in the case of the ANWR, Koomey, et al. examine just the economics of drilling in the region without considering the ecological implications, in order to ensure that they engage the issue within the same parameters and on the same terms as proponents of drilling:

> The nation must weigh carefully the costs and benefits of drilling in the Arctic Refuge against pursuing other energy policies. The Refuge contains highly uncertain geology, world oil prices fluctuate wildly, exploration and extraction would take 40 to 50 years to complete, and private oil companies will demand a fair rate of return for investing their capital to explore and drill there. For these reasons, mean, fully risked, economically recoverable estimates are the most meaningful measure of the region's oil potential.[1779]

In the media reports examined, however, common errors that a report did not specify included:

- the particular area it was discussing (whether it was area 1002, which is the area of the policy debate, or whether it also included surrounding and off shore areas which would increase the amount of available oil)
- the type of assessment (whether it was conducted to assess how much oil was there, how much oil was technically recoverable from among what was there, or how much oil was economically feasible to recover)
- the type of risk assessment (conditional, appropriate for fully explored regions, or high risk—the category used when much of the detail about the geology is unknown as in the Alaskan case)
- the high, low, and mean range of estimates
- what the assumed future oil prices might be that can be used to estimate cost-effective recovery[1780]

Koomey, et al. note that the ANWR data all come from the same source—the 1998 U.S. Geological Survey (USGS) report, in which scientists gave high, low, and mean estimates, based on thousands of computer simulations. The range of estimates was necessary to characterize the uncertainty of their estimates of recoverable oil reserves. This range of estimates, however, enabled proponents of drilling to choose the high estimates to cite, and opponents of drilling to choose low estimates to cite. Journalists preferred to rely on these secondary sources, which generally cited only one estimate, and rarely went back to the original USGS source for their data, which would have provided

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[1779] Ibid. p. 149.
[1780] Ibid.

the full range of estimates and the widely differing assumptions on which they were based. Rather than presenting the scientific evidence, the media were more concerned with presenting two sides of the political debate and reporting what people said.

Koomey, et al. analyzed 35 news stories printed or aired by the mainstream media between December 2000 and September 2001 concerning the amount of oil likely to be found in the Arctic National Wildlife Refuge. They found that estimates of how much oil is available in Alaska were "all over the map." The most frequently cited estimate was 16 billion barrels, which is the high-end estimate often quoted by proponents of drilling. Other commonly cited numbers were approximately 3 to 3.5 billion, 6 billion, and 10 billion barrels. The authors observed that the "media reports (on average) implicitly overstated the economically recoverable reserves in the 1002 area by about a factor of three."[1781] In addition, only about a fourth of the articles mentioned economic considerations involved in determining how much oil could be recovered, such as the likely quality and market value of the type of oil found, the cost of future seismic testing and exploration, drilling and infrastructure costs, transportation costs to market, or the rate of financial return expected by oil companies.

In conclusion, Koomey, et al. stress that information vital to assess policy options generally is not evident in the media reports. They suggest that key information is needed to expand the policy debate and to allow more questions to be asked, such as:

> How much would it cost to find 3, 4, or 5.6 billion barrels of oil in the Arctic Refuge? How much would it cost to save that much oil through improved fuel efficiency or alternative fuel sources in vehicles? What environmental and employment impacts are associated with increased energy production or energy efficiency? Over what time period would each resource become available? How does the split between public and private costs and benefits compare in each case?[1782]

The answers to these questions, the authors argue, could form the basis of a meaningful debate over the Artic Refuge and the basis for more comprehensive and accurate media coverage of that debate. As in previous sections, an example is used here to illustrate the potential gap between the information available in the public arena and that required to make informed decisions. As the media are a key source of learning and knowledge for the public, misinformation and information gaps in media reporting will undermine the potential for a well-educated populace. We have had to rely on examples, as systematic and integrated data on the degree and pervasiveness of misinformation, censorship, and misuse of numbers are not presently available.

[1781] Ibid. p. 147.
[1782] Ibid. pp. 149–150.

15.3.6 Misleading and erroneous health information

Critics have found that misleading information also pervades the health literature, undermining the potential for a public well-educated in health issues. For example, as illustrated by Mark Abley in his discussion of BIOTECanada, organizations can express different goals to the public and to government and industry. For example, BIOTECanda provided Industry Canada with the following self-description on its lobby registration form: "BIOTECanada is the voice for biotechnology in Canada that fosters the growth, profitability and long-term viability of the Canadian biotechnology industry."[1783] The information BIOTECanada presents on its public website, however, presents a different emphasis, describing itself as: "the national organization dedicated to promoting a better understanding of biotechnology and the many ways it contributes to improving the quality of life of all Canadians."[1784]

Public knowledge of scientific issues, including those affecting public health, requires reliable information from researchers. Fraud—defined in its various forms as fabrication, falsification, or plagiarism—is the most serious type of researcher misconduct and the main type that is regularly enforced.[1785] Other types of misconduct that are considered minor are generally overlooked. Evidence suggests, however, that "mundane 'regular' misbehaviours present greater threats to the scientific enterprise and to public knowledge than those caused by high-profile misconduct cases such as fraud."[1786]

Researchers Brian Martinson, et al. of the Health Partners Research Foundation and the University of Minnesota in the U.S. anonymously surveyed 3,247 early- and mid-career scientists funded by the National Institutes of Health in 2002, and found that 33% of the respondents had engaged in at least one of the top ten areas of misconduct during the previous three years.[1787] Less than 1.5% of the respondents admitted plagiarism or falsifying research data. However 15% said that they had changed the design, methodology, or results of a study in response to pressure from a funding source; 12.5% said they had overlooked others' use of flawed data or questionable interpretation of data; 10.8% admitted to withholding details of methodology or results in papers or proposals; and 6% said they had failed to present data that contradicted their own research.

Since this study, published only in 2005, is the first time such behaviours have been analyzed quantitatively, the authors noted that they could not determine whether the current situation is the usual practice, or whether the challenges facing scientists today

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[1783] Abley, Mark. *Biotech Lobby Got Millions from Ottawa: Public Cash Used to Alter Image*, Ag Biotech Info Net, 2000; accessed December 2005; available from http://www.biotech-info.net/altered_image2.html.
[1784] Ibid., accessed.
[1785] Canadian Association of University Teachers (CAUT), Academic Freedom & Tenure Committee. *CAUT Policy Statement on Fraud and Other Misconduct in Academic Research*, CAUT, 2003; accessed December 2005; available from http://www.caut.ca/en/policies/fraud.asp.
[1786] Martinson, Brian C., Melissa S. Anderson, and Raymond de Vries. "Commentary: Scientists Behaving Badly," *Nature*, vol. 435, no. 9, 2005: 737-738. p. 737.
[1787] Ibid.

are creating greater pressures and stresses that are leading to higher levels of misconduct than in the past. Nevertheless, the study points to the type of baseline data that could potentially be developed and used for an indicator of scientific integrity in Canada.

In another area, researchers, who conducted a study for the Canadian Centre for Policy Alternatives (CCPA), searched 24 of Canada's largest newspapers in 2000 for reports on five prescription drugs that had been launched in Canada during the previous five years. The authors analyzed the articles they identified for pertinent information, including, among other factors: benefits and harms, whether they described clinical (meaningful) rather than surrogate benefits (not as meaningful), the magnitude of the benefits and harms, study trials, and the financial affiliations of quoted spokespersons.

The CCPA report found that Canadians, including physicians, are not receiving the kind of information they need to make informed decisions about prescription drugs.[1788] The amount of information on drugs available in the media, including a massive amount of drug advertising on television, is high, but the CCPA study found that the quality of this information is not balanced or accurate. This is crucially important, as the report points out, since consumer research has shown that adults place a high degree of trust in media sources, which are second after health professionals as a source of health information. This again illustrates why it is essential for indicators of an educated populace to consider the media as a vital learning structure, and assessments of media reporting quality as a key condition for an educated populace. Although conventional education indicators focus largely on formal educational structures, the evidence indicates that, at least in the area of health knowledge, other sources like the media may be more important than what is taught in schools in influencing public understanding.

The study also found that the financial affiliations of spokespersons cited in the articles, such as whether they have received payments and research grants from the pharmaceutical companies whose drugs they are describing, were rarely discussed. Therefore potential biases were not transparent. Journalists, as well, rarely have access to independent experts who can assist in interpreting the information they receive, which often comes from sophisticated press releases produced by public relations agencies based on information supplied by the pharmaceutical companies. These press kits provide ready content and quotations from experts and scientific papers. Also, there often were no independent sources that doctors could rely on when new drugs were launched. [1789]

Bubela and Caulfield of the University of Alberta use the Dow Jones Interactive and Canadian NewsDisk databases, which offer the most complete collections of Canadian

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[1788] Cassels, Alan, Merrilee Atina Hughes, Carol Cole, Barbara Mintzes, Joel Lexchin, and James McCormack. *Drugs in the News: How Well Do Canadian Newspapers Report the Good, the Bad and the Ugly of New Prescription Drugs?*, Canadian Centre for Policy Alternatives, 2003; accessed December 2005; available from
http://www.policyalternatives.ca/index.cfm?act=news&do=Article&call=155&pA=F4FB3E9D&type=1.
[1789] Ibid., accessed. p. 7.

newspapers, to examine the accuracy of media coverage of genetic research from January 1995 to June 2001.[1790] Specifically, the authors compare the contents, claims, and conclusions of 111 original articles on gene discoveries published in 24 scientific and medical journals with the associated 627 newspaper articles published in Canada, the United States, Great Britain, and Australia, which reported on those findings.

Results showed that the information in the majority of newspaper articles was reported accurately, with 11% of the articles having exaggerated claims as compared with the journal claims, 26% having slightly exaggerated claims, and 63% having no claims that differed substantially from those in the original scientific articles. Articles were assigned to the three categories based on nine variables, which included, in part, attention structure (length of article and positioning in the newspaper), valuation tone (positive or negative), technical accuracy (either omissions or errors that changed the description of the methods or interpretation of the results), and use of metaphors. Technical information was presumed to be accurate in the original scientific journal articles. The authors found no significant technical or scientific errors in 82% of the newspaper articles. However, they did find biases in choice of topic, based largely on sensational content. Thus, a disproportionately larger number of articles on behavioural genetics, which includes genetic research related to sexual orientation, alcoholism, mental illness, or criminality, were reported in newspapers compared to their number in journals.

The most important variable, according to the authors, was the ranking of risks and benefits. Only 15% of the newspaper articles and 5% of the scientific journal articles discussed the costs or risks of the reported genetic research. However, 98% of the journal articles and 97% of the newspaper articles discussed the likelihood of benefits, and 70% of both types of articles identified the benefits as very likely or certain. Of the small number of journal and newspaper articles that discussed risks, 71% discussed the risk as being very unlikely to somewhat likely, and 27% identified the risk as very likely to already present.

Bubela and Caulfield claim that their results concerning benefits and risks are consistent with existing data on news stories, such as those on drugs used for disease prevention and on new prescription drugs, which mainly mention benefits rather than side effects or harms. In conclusion, they propose: "This trend may contribute to a general hyping of genetic research, potentially inflating the expectations of the general public and special interest groups such as patient groups and investors."[1791]

[1790] Bubela, Tania M, and Timothy A Caulfield. "Do the Print Media 'Hype' Genetic Research? A Comparison of Newspaper Stories and Peer-Reviewed Research Papers," *Canadian Medical Association Journal*, vol. 170, no. 9, 2004: 1399-1407.
[1791] Ibid. p. 1403.

15.3.7 Information availability and information overload

Information is the precursor of knowledge and as such is vitally important to the creation of knowledge and to the mental processes required for learning. As noted earlier, the information that people must cope with is growing exponentially—so much so that new terms like the "information age" and "knowledge economy" have been coined to describe the present era. This expansion of information can be highly beneficial to educators and researchers who use the vast quantities of easily available information with care and discernment. However, abundant new evidence also reveals that this growth is increasingly leading to "information overload." The term, information overload, is also referred to as cognitive overload, sensory overload, communication overload, and knowledge overload in the literature.[1792]

According to Allen Schick, et al. the amount of information itself is not the main problem. Rather the problem is the lack of time and mental energy available to process it.[1793] Schneider also remarks that the issue is not just the *quantity* of information, but notes that the indeterminate *quality* of information, based on the level of novelty, ambiguity, uncertainty, intensity or complexity, also contributes to the effects of information overload.[1794] In addition to information quantity and quality, researchers often add variations in information *format* as a cause of information overload. This reflects the fact that information must be accessed in multiple and often incompatible formats such as online data, printed books or journals, and multimedia video and audio formats.[1795]

According to epistemologist Francis Heylighen, of the Free University of Brussels, when individuals and groups are forced to consider more information than they can process effectively, the result is anxiety, stress, and potentially dangerous errors of judgment.[1796] Heylighen points out that the most highly educated people, such as managers, lecturers, researchers, scientists, and technologists, are most affected by information overload and are most aware of the gap between the information that is available and their capacity to assimilate only a fraction of it in their work.[1797] Often, these educated individuals, in an effort to avoid mistakes and reduce uncertainty, keep increasing the volume of information they think they need, even after the state of overload has been reached.

[1792] Eppler, Martin J., and Jeanne Mengis. *A Framework for Information Overload Research in Organizations*, University of Lugano, 2003; accessed December 2005; available from http://www.bul.unisi.ch/cerca/bul/pubblicazioni/com/pdf/wpca0301.pdf.
[1793] Schick, Allen G., Lawrence A. Gordon, and Susan Haka. "Information Overload: A Temporal Approach," *Accounting Organizations and Society*, vol. 15, 1990: 199-220.
[1794] Schneider, S. C. "Information Overload: Causes and Consequences," *Human Systems Management*, vol. 7, 1987: 143-153.
[1795] Ho, and Tang. "Towards an Optimal Resolution to Information Overload: An Infomediary Approach."
[1796] Heylighen. *Complexity and Information Overload in Society: Why Increasing Efficiency Leads to Decreasing Control*, accessed.
[1797] Ibid., accessed.

In one U.S. study, 48% of the managers reported that information overload led to decreased job satisfaction, and 47% said that because of the overload, they felt more pressure at work and had less free time, which in turn strained their personal relationships.[1798] In these cases, according to Daniel Moody and Peter Walsh, there seems to be a lack of awareness of information processing limits.[1799]

An early multilevel experiment on information input overload was conducted in 1960 at levels of the cell (sciatic nerves of frogs), organ (optic tracts of white rats), organism (human subjects working alone), groups (human subjects working in groups of three), and organizations (laboratory "organizations" made up of nine subjects).[1800] The resulting data showed, in all forms, that as information input increased, measured in bits per second, the output, measured similarly, at first rose sharply. Then as the amount of input reached a certain output rate—the "channel capacity"—the output levelled off, and finally, as the capacity of the systems was overloaded, the output fell toward zero as "breakdown or the confusional state" occurred.

Based on this and more recent research, there appear to be clear limits to the amount of information that people can process. Heylighen cites evidence that people usually can keep only seven items in their short-term memory at one time and that they can process and calculate 126 bits per second.[1801] Heylighen describes the increase in speed that has occurred in the transmission and processing of information:

> Without doubt, the most spectacular efficiency gains have been made in the transmission and processing of information. In pre-industrial times, people communicated over long distance by letters, carried by couriers on horseback. Assuming that an average letter contained 10,000 bytes, and that a journey took one month, we can estimate the average speed of information transmission as 0.03 bits per second. In the 19th century, with the invention of the telegraph, assuming that it takes a little over two seconds to punch in the Morse code for one character, we get a transmission rate of 3 bits per second. The first data connections between computers in the 1960's would run at speeds of 300 bits per second, another dramatic improvement. Present-day, basic modems reach some 60,000 bits per second. However, the most powerful long distance connections, using fibre optic cables, already transmit billions of bits per second. In a mere

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[1798] Ho, and Tang. "Towards an Optimal Resolution to Information Overload: An Infomediary Approach."

[1799] Moody, Daniel, and Peter Walsh. "Measuring the Value of Information: An Asset Valuation Approach," in *Guidelines for Implementing Data Resource Management (4th Edition)*, ed. Morgan, B. and C. Nolan. Seattle, Washington: DAMA International Press, 2002.

[1800] Miller, J. D., and R. Pardo. "Civic Scientific Literacy and Attitude to Science and Technology: A Comparative Analysis of the European Union, the United States, Japan, and Canada," in *Between Understanding and Trust: The Public, Science, and Technology*, ed. Dierkes, M. and C. von Grote, 81-129. Amsterdam: Harwood Academic Publishers, 2000.

[1801] Heylighen. *Complexity and Information Overload in Society: Why Increasing Efficiency Leads to Decreasing Control*, accessed.

200 years, the speed of information transmission has increased some 100 billion times![1802]

A range of personal traits that are seen as limitation factors in the ability to cope with information overload are reported in the literature, such as personal skills, the level of experience, and the motivation of a person.[1803] In addition, if the process and concentration of the individual are interrupted, or if the individual is working on a number of parallel projects or tasks at the same time, overload can also occur.[1804]

Heylighen also speculates that the amount of "spam" messages emailed to computers could create a loss of worldwide productivity.[1805] For example, if an addressee spends an average of one second to delete a spam message, and if the message is sent to 100 million people, this entails a total productivity loss of about 700 working weeks. If 100 spam messages are sent out each day, 70,000 working weeks are lost, and the cost of the loss is shifted from the sender to the receiver. He also suggests that if each email sent cost the sender 10 cents, it would make spamming uneconomical, and publicity messages would be targeted more precisely.

Ho and Tang report examples of information overload that they found in their research.[1806] For example, in looking for information about the pharmaceutical industry, they found the "sheer mass of emerging biomedical knowledge" overwhelming. MEDLINE alone indexes more than 4,000 journals containing more than 9 million abstracts. Ho and Tang also found the volume of new publications in every field to be enormous, which makes it impossible for anyone to keep up with the publishing pace. On the surface of the Internet there are about a billion documents indexed, but in the deep Internet[1807] there are over 500 billion documents online that are not indexed.[1808]

Researchers at the University of California at Berkeley conducted two studies, using 1999 and 2002 data from a variety of available sources, to estimate the annual size of the global stock of new information contained in four storage media—print, film, magnetic,

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[1802] Ibid., accessed. p. 3.

[1803] Eppler, and Mengis. _A Framework for Information Overload Research in Organizations_, accessed.

[1804] Ibid., accessed.

[1805] Heylighen. _Complexity and Information Overload in Society: Why Increasing Efficiency Leads to Decreasing Control_, accessed.

[1806] Ho, and Tang. "Towards an Optimal Resolution to Information Overload: An Infomediary Approach."

[1807] "The deep web (or invisible web or hidden web) is the name given to pages on the World Wide Web that are not part of the surface web that is indexed by common search engines. It consists of pages which are not linked to by other pages (e.g., dynamic pages which are returned in response to a submitted query). The deep web also includes sites that require registration or otherwise limit access to their pages (e.g., using the Robots Exclusion Standard), prohibiting search engines from browsing them and creating cached copies." Wikipedia. _Deep Web_, 2006; accessed July 2006; available from http://en.wikipedia.org/wiki/Deep_web.

[1808] Bergman, Michael K. "The Deep Web: Surfacing Hidden Value," _The Journal of Electronic Publishing_, vol. 7, no. 1, 2001: accessed July 2006; available from http://www.press.umich.edu/jep/2007-2001/bergman.html.

and optical, as well as new information which is seen or heard in four "information flows" through electronic channels—telephone, radio, television, and the Internet.[1809] Print media included all new books, newspapers, mass market periodicals, scholarly periodicals, newsletters, and archival office documents; film included photographs, motion pictures, and x-rays; magnetic storage types included video, audio, and digital tapes, mini-DV, floppy, and zip disks, audio mini disks, flash memory and hard disk drives; and optical storage types included CDs, CD-ROMs, and DVDs, all of which are mainly for the distribution of software, data, cinema, and music.

Since there is no common standard with which to measure the amount of information, the researchers translated information formats to a single standard—terabytes—in order to calculate composite results on total information flows. One terabyte (10^{12} bytes) equals 1,000 gigabytes (one gigabyte equals 10^9 bytes). To put this into perspective, an exabyte (10^{18} bytes) is 1,000,000,000,000,000,000 bytes, or a billion gigabytes. By contrast, a kilobyte is 10^3 bytes, a megabyte is 10^6 bytes, a gigabyte is 10^9 bytes, a terabyte is 10^{12} bytes, and a petabyte is 10^{15} bytes. An average tree used for pulp and paper produces about 80,500 sheets of paper, and one terabyte of printed information uses about 50,000 trees. All U.S. academic research libraries combined contain about 2 petabytes of information, and all printed material in the world adds up to about 200 petabytes of information. Five exabytes of information is equivalent to the amount of information, if digitalized, contained in half a million libraries the size of the U.S. Library of Congress print collection, which contains over 19 million books and other print collections. All of the information contained on the World Wide Web contains about 17 times as much information as the Library of Congress print collections.

The Berkeley researchers found that print, film, magnetic, and optical storage media together produced between two and three exabytes (one exabyte equals 10^{18} bytes) of new information in 1999 and approximately five exabytes in 2002, which represents an almost doubling of information in just three years, or a growth rate of about 30% of newly stored information per year. Ninety-two percent of the new information was stored on magnetic media, mostly in hard disks; film contained 7% of the total; paper just 0.01%, and optical media only 0.002% of the total. The amount of newly stored information produced each year represents almost 800 megabytes of information per person on the planet, considering a 6.3 billion population. It would take about 30 feet of books to store the equivalent of 800 megabytes of information on paper.

The amount of new information stored on paper increased 36% between 1999 and 2002. The researchers note that it currently takes about 786 million trees to produce the world's annual paper supply, most of which is consumed in Europe and North America, so a substantial increase in information stored on paper will have a major impact on forest sustainability. The amount of new information recorded on magnetic storage media grew 80% between 1999–2002—the fastest growing segment of all storage media for information.

[1809] Lyman, Varian, Charles, Good, Jordan, and Pal. *How Much Information 2003?*, accessed.

New information flowing through the four electronic channels contained almost 18 exabytes of new information in 2002, or almost three and a half times that found in storage media. More than 98% of the new information flowing through electronic channels was from telephone calls, likely reflecting the exponential growth of cell phone use during this period. Worldwide, telephone calls, including both landlines and mobile phones, contained 17.3 exabytes of new information.

The Internet represented the second largest component of information flows, but is the"fastest growing new medium of all time."[1810] The Internet produced about .53 exabytes of new information in 2002.[1811]

The researchers found that only about one fourth of radio and television broadcasting hours consists of new programming. The report notes:

> Most radio and TV broadcast content is not new information. About 70 million hours (3,500 terabytes) of the 320 million hours of radio broadcasting is original programming. TV worldwide produces about 31 million hours of original programming (70,000 terabytes) out of 123 million total hours of broadcasting.[1812]

Together, this translates to .07 exabytes if new information.

In sum, there has been a huge increase in the total quantity of information available within a very short period of time, and evidence indicates that this exponential increase in information continues unabated. To measure the effect of information overload, however, it is necessary to translate this basic quantitative evidence on amounts of available information into impacts on mental processes and outputs—a much more challenging task.

15.3.8 Measurement of information overload

Most of the information on information overload and its possible measurement is found in the business literature. This is not surprising, given the focus of business on the "information economy." As Peter Drucker, one of the most influential authors in the management field, observes: "From being organized around the flow of things and the flow of money, the economy is being organized around the flow of information."[1813] In this context, "information is the end product that is delivered to the customer."[1814] The

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[1810] Ibid., accessed. p. 11.
[1811] Ibid., accessed. pp. 2, 11.
[1812] Ibid., accessed. p. 2.
[1813] Drucker, P. "The Economy's Power Shift." *Wall Street Journal*, September 24, 1992. cited in Moody, and Walsh. "Measuring the Value of Information: An Asset Valuation Approach." p. 2.
[1814] Moody, and Walsh. "Measuring the Value of Information: An Asset Valuation Approach." p. 2.

value of information, in this context, "lies in making better decisions, speeding the movement of goods and services through the economy and gaining competitive advantage."[1815] As noted above, there is evidence that information overload may actually undermine rather than enhance this decision-making capacity.

Moody and Walsh affirm that presently there is no consensus on how to measure the value of information—a task they acknowledge is difficult, since information follows different laws than traditional economic assets.[1816] Information, for example, "acts as a catalyst rather than as a direct source of revenue." Existing economic measurement models that have been applied to assessments of information include those used in communications theory and in accounting theory.[1817] The former use mathematical measures that focus on the amount of information transmitted, but generally ignore consideration of content or meaning. In the three most often used accounting methods, the cost, or historical cost, method places value on the asset based on its original cost; the market or current cash equivalent method, also called current cost accounting, places value on how much other people or organizations are prepared to pay for the asset; and the utility or present value method estimates the present value of expected future benefits or else estimates anticipated replacement costs of current assets.

In the latter case, the establishment of future benefits is difficult and subjective, depending in large part on the chosen discount rate. The market method is not useful for valuing information since most information is used for administration purposes, is confidential, or is commercially sensitive, as in the case of sales information, which is therefore not sold on a regular basis. These factors limit the utility of traditional economic measurement tools in assessing the value of information as an asset. Yet such valuation is essential in an information economy.

Moody and Walsh develop a number of principles for valuing information in order to develop a method of valuing information assets. They identify seven laws, or unique properties of information, that govern the behaviour of information as an economic good and that must be considered in evaluations:

1. Information is infinitely shareable without loss of value and it is accumulative. But knowledge is power and people do not therefore share it easily. For that reason, the full value of information cannot be realized.
2. The value of information increases with its use, but it has no real value on its own.
3. Information is perishable over time. At the operational level it has a shorter shelf-life than at the decision support level or the historical archival level.
4. The value of information increases with its accuracy.
5. The value of information increases when combined with other information.

[1815] Ibid. p. 13.
[1816] Ibid.
[1817] Ibid.

6. More information is not necessarily better, as it can lead to confusion, poor decision making, and information overload.

7. Information is not depletable; it is self-generating since the more you use it, the more you have. 'This is because new or derived information is often created as a result of summarising, analysing or combining different information sources together. The original information remains and the derived information is added to the existing asset base. Fundamentally, this is why information is not a scarce resource. Techniques like data mining are used specifically to generate new information from existing holdings of data.'[1818]

Moody and Walsh used these principles to propose modifications to the historical cost valuation approach in order to assess the value of information assets. They used the cost of collection of the information as a baseline and included the cost of processes used to extract the data from operational systems. Data that were collected redundantly or not used, since they were not shared, were given no value (Law 1). The initial cost of the information was valued at the cost of collection, but each additional use was added to the value (Law 2). The information was depreciated based on its shelf life (Law 3) and accuracy, relative to what is considered to be acceptable (Law 4). This method is presently being tested in a number of organizations.

Most of the attempts at measurement, however, only measure the quantity of information in a context-specific situation, and do not attempt to assess the impact of this information on decision-making capacity or the quality of the consequent economic outputs described by Drucker. For example, Haksever notes that measurement units used are "bits in an electronic mail setting, words for an article, pages of a book, time for a TV commercial, and so on."[1819] There is very little reported research on measuring the quality of information or its translation into quality decisions, management, and economic outputs. As Ho and Tang point out, measuring the quality of information is difficult because the information is relative, subjective, and context specific.[1820]

In an effort to address this gap, Haksever has developed a numeric model to identify the occurrence pattern and probabilities of information overload in a management context using time as a criterion.[1821] In this scenario, information overload is described as occurring when the demands on information processing time exceed the supply of time.

> Time was conceptualised as a measure of information processing capacity (IPC) and as a measure of the interaction and internal information processing demands on that capacity (IL). This made it possible to define information overload in

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[1818] Ibid. p. 5–9.

[1819] Haksever, A. Mehmet. *A Model to Predict the Occurrence of Information Overload of Project Managers*, Istanbul University, 1997; accessed December 2005; available from http://itc.scix.net/data/works/att/w78-2000-415.content.pdf. p. 3.

[1820] Ho, and Tang. "Towards an Optimal Resolution to Information Overload: An Infomediary Approach."

[1821] Haksever. *A Model to Predict the Occurrence of Information Overload of Project Managers*, accessed.

terms of the relation between the demands on, and supply of, time and measure it conceptually for any entity, i.e. individual, group or organization, regardless of the causes or circumstances of its occurrence.[1822]

The model measured time in a variety of situations including the time spent interacting with other project team members and relevant outside authorities, and time spent on internal information processing, which could involve thinking, reading, planning, problem finding, problem solving, implementation, and review. The information processing demands placed on the time of the manager were seen to be equivalent to the information load.

In order to study the changing patterns of information overload, Haksever divided the project to be measured into four stages that reflected the different tasks needed, and the distinctive character and quantity of information needed for each task. The stages were feasibility / briefing, design, procurement, and construction / completion. In order to determine overload, managers were surveyed and given a guiding "overload situation scale," drawn from Haksever's definition of information overload. On this scale, managers were required to choose one of five possible overload situations, moving from "no communication or information processing time spent" to "the amount of time available to process information was less than the required time very often." Managers then used this scale to rate the overload situations occurring in both the external and internal processing situations in each of the four stages. Results were then placed on an information load matrix and evaluated numerically using ordinal categorical data analysis techniques. In conclusion, Haksever reports:

> Project managers' information overload varies throughout the stages of the project, and the sources of the overload also change with these stages. The construction stage has the highest probability of information overload, followed by the design stage. The main sources of information overload are the project participants contributing the key expertise in each stage. In the design stage, the key contributors are architects and consultants, and in the construction stage, contractors and sub-contractors. Architects' and consultants' contributions to information overload show a similar pattern through the project duration, as do those of contractors and sub-contractors.[1823]

The efforts by Haksever and Moody and Walsh indicate the type of new research needed to assess the value of information and the extent and cost of information overload. Again, indicators of an educated populace will need to include such measures in the future if they are to be relevant to the "information age" and to account for the impacts on learning outcomes of the massive quantities of new information available. Qualitative evidence indicates that such impacts may be adverse (as denoted by the term "information

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[1822] Ibid., accessed. p. 2.
[1823] Ibid., accessed. pp. 11–12.

overload") or positive (as in Drucker's observation that good information can improve decision-making).

As noted above, researchers are generally only at the stage of developing appropriate methods for assessment of the value of information and of the impacts of information overload, with only experimental quantitative applications currently under way, as in Haksever's analysis. We are still far from the composite, comparable, quantitative societal assessments in this field that are needed to assess an educated populace. Hopefully, the need for good indicators in this area will contribute to the demand for such research and facilitate the eventual development of usable indicators of both information value and information overload, and the development of survey data along the lines suggested by Haksever, Moody and Walsh to populate those indicators. In the meantime, these analyses serve as suggestions to inform the populace on issues affecting the quality of information available to them, and to include opportunities for such analyses within educational curricula.

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