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Twenty First Century Education: Transformative Education for Sustainability and Responsible Citizenship

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"If you are planning ahead 1 year, plant a seed.
If you are planning ahead 10 years, plant a tree.
If you are planning ahead 100 years, educate the people."
Hung Hsu, Chinese poet, 500 BC

Abstract

Many ministries of education focus on twenty-first century education but unless they are looking at this topic through a sustainability lens, they will be missing some of its most important elements. The usual emphasis on developing skills for employability in the current global economy begs the question whether the global economy is itself sustainable over the course of this century. According to the World Business Council on Sustainable Development (WBCSD) whose membership comprises 29 of the largest, most important companies on the planet, it is **not**. Continuing on the current development path would require approximately 2.3 planets earth to support existing levels of resource and energy use, and waste production, projected out for a global population which will reach 9 billion by 2050. And yet most discussions of 21st century education are premised on servicing, rather than transforming, the current global economy.

This paper explores the opportunities and benefits of connecting the discourse on twenty-first century education with Education for Sustainable Development (ESD) which seeks to prepare learners for the varied and interrelated environmental, social, and economic challenges they will meet as they confront a changing world. ESD emphasizes futures thinking and strategic planning that will enable learners to help create and flourish in a more sustainable economy. Conventional teaching models must also shift to a "transformative" style of education for the twenty-first century in order for humankind to learn how to live more sustainably on this planet.

Keywords: education for sustainable development (ESD), twenty-first century education, sustainable economy, transformative learning

Ministries of Education in Canada and around the world are abuzz with exciting conversations and significant policy commitments around twenty first century education. But unless they are looking at this topic through a sustainability lens, they will be missing some of its most important elements. This paper explores the opportunities and benefits of connecting the discourse on twenty first century education with Education for Sustainable Development (ESD) and developing an exciting new vision of 21st century education for sustainability and responsible citizenship.

Though it has intellectual roots in Ancient Greek and Chinese philosophy and in traditional ecological knowledge, ESD entered the global discourse on education through Agenda 21, the document signed by every nation in the world at the Rio Earth Summit in 1991 (Bell, 2009). The word education appears in each of the 40 chapters of *Agenda 21*, but it was given special treatment in chapter 36: "Promoting Education, Public Awareness, and Training."

In keeping with the emphasis of the Rio Earth Summit (the official title of which was the "UN Conference on Environment and Development") the initial definition of ESD in *Agenda 21* was rather narrow: it referred to the need to include attention to environment and development in education curricula. But *Agenda 21* also suggested broadening the focus of ESD (which has continued to evolve ever since) to look at social and cultural dimensions. This broader focus informed the "Eco-Ed" Conference held a few months after Rio in Toronto; and the World Conference on ESD held in 1997 in Thessaloniki Greece.

In 2004, the UN declared the Decade on ESD (2005–2014) recognizing that ESD "develops and strengthens the capacity of individuals, groups, communities, organizations, and countries to make judgments and choices in favor of sustainable development. It can promote a shift in people's mindsets and, in so doing, enable them to make our world safer, healthier, and more prosperous, thereby improving the quality of life." (Council of Ministers of Education Canada, 2010).

Education for Sustainable Development (ESD) is therefore in essence, and by definition, education for the 21st century. According to the United Nations Economic Commission for Europe (the UN regional grouping of 54 countries that includes Canada) ESD "promotes sustainable thinking and acting. It enables children and adults to make decisions and at the same time understand how those decisions affect future generations and the life of others." Similarly, the mission of Learning for a Sustainable Future (LSF), a national NGO established in 1991 by the National Round Table on the Environment and the Economy, is to inspire a new generation of responsible citizens "by promoting, through education, the knowledge, skills, values, perspectives and practices essential to a sustainable future."

And yet, a separate discourse has emerged about 21st century education that, while outlining important 21st century skills and competences, typically makes no mention of ESD and arguably pays insufficient attention to the sustainability challenges that will likely define the prospects for human existence on this planet beyond the next century (Pipere, Veisson, & Salīte, 2015).

UNESCO established a Commission on Education for the Twenty-first Century under the chairmanship of Jacques Delors.

Its 1998 Report entitled *Learning: The Treasure Within*, shaped subsequent discussions around the globe, and spawned a series of OECD studies as part of the Millennium Learning Project. Commenting several years later on the "Case for Twenty-

first Century Learning," OECD official Andreas Schleicher stated "A generation ago, teachers could expect that what they taught would last their students a lifetime. Today, because of rapid economic and social change, schools have to prepare students for jobs that have not yet been created, technologies that have not yet been invented and problems that we don't yet know will arise" (Schleicher, 2016).

Many countries developed their own perspective on twenty-first century education. In the United States an organization called the Partnership for the 21st century (P21) focused primarily on preparing students (and by extension the US) to be more competitive in the current global economy. Given that the main founders of P21 were large IT companies like Cisco, Microsoft, and Intel, some criticized P21 as a narrowly disguised effort to increase sales of computers and software. A more trenchant criticism was that a narrow focus on 'skill sets' for employability "often fail[s] to take into consideration environmental limits, social justice, or adaptation to the deteriorating ability of the Earth to support human life and, therefore, [is] unlikely to serve the long term interests of learners, businesses, societies or the human species" (Luna, 2009).

A number of Canadian jurisdictions adopted education for the 21st century as a "frame" for thinking about future directions of education in Canada. As well, some of the most important work in Canada has been undertaken by an NGO called C21, which is dedicated to developing "a national learning vision founded on Canadian values and principles." Its report called "*Shifting Minds*" provides an excellent summary and overview of how each province has approached the concept of 21st century education (Milton 2012). It offers seven "Guiding Principles" including the assertion that "literacy, numeracy, life skills and 21st Century competencies must now be the foundational learning outcomes of Canada's public education system." Furthermore, technology must be used "to attain the competencies required for economic, social, environmental, financial and personal growth and progress."

The work of C21 is more well-rounded than that of P21 but both put a great deal of emphasis on preparing students for employment in the current global economy. The problem with this approach is that it begs the question whether the current global economy is itself sustainable over the course of this century. According to the World Business Council on Sustainable Development (WBCSD) – an organization whose membership comprises 29 of the largest, most important companies on the planet – it is **not**.

WBCSD has recently published a document entitled *Vision 2050: The New Agenda for Business*. To prepare the report the 29 member companies worked "with each other, with hundreds of representatives from business, government and civil society, with regional partners and with experts." Their vision is simple and straightforward: "In 2050, some 9 billion people live well, and within the limits of the planet." (World Business Council for Sustainable Development, 2010).

In disturbing contrast to this vision of a sustainable world WBCSD has projected the consequences of a continuation to 2050 of Business As Usual. The current trajectory leads to a very negative future including severe ecosystem degradation, increased climate change, dire social impacts of increasing poverty and global unemployment. In terms of environmental impact, their research shows that we would require approximately 2.3 planets earth to support current levels of resource and energy use, and waste production, projected out for a global population which by most estimates will reach 9 billion by 2050. So a continuation to 2050 of current business and economic practices is not close

to being sustainable on this planet. And yet most discussions of 21st century education are premised on servicing, rather than transforming, the current global economy. To overhaul our education systems to better serve an economic model that is itself designed for the 20th rather than the 21st century is a bit like "navigating the complex environment of the future by peering relentlessly into a rear view mirror" (Robinson, 2001).

ESD brings a critical and missing perspective (Fischer et al, 2015). It is based on the assumption that appropriate education for the 21st century must pay careful attention to the interlinked environmental, social and economic challenges facing humankind over the next 100 years or so. Students in primary and secondary schools today will likely live through most of the balance of this century. Life expectancies in the 80s and 90s will be commonplace. Students in Kindergarten today will be in mid-career in 2050. What sort of world will they face? What kinds of learning, and what life skills, will they require to live well in such a world?

ESD also recognizes that the future itself is not predetermined. On the contrary it is amenable to conscious efforts to move in a more desirable direction (notwithstanding the hard kernel of truth in the old saying "life is what happens while we are making plans"). A critical element of ESD is futures thinking: enhancing students' capacity to envision a more sustainable future and to take actions in the present that will shift the trajectory of change in a more sustainable direction (Wayman, 2009; Iliško, 2014). Of course visioning, goal setting and strategic planning must be informed by an acute awareness of current reality and projected trends, of key drivers and high leverage opportunities.

At the present time there is a great deal of effort underway to undertake precisely this kind of futures thinking. In addition to the WBCSD *Vision 2050* exercise, the international community is engaged in intensive visioning and negotiations on shaping a new global sustainable development agenda, and to define a set of Sustainable Development Goals. This comes at a time where three current global initiatives are coming to an end, UN Decade on ESD, which will be completed in 2014; the Millennium Development Goals (MDG's) and Education for All both of which come to an end in 2015.

In the Report of the, *Open Working Group Proposal for Sustainable Development Goals*, released this summer, it is clear that education is essential to achieve sustainable change. The Open Working Group included ESD as one of the targets for the proposed goal education goal for the post 2015 development agenda, to "ensure inclusive and equitable quality education and promote life-long learning opportunities for all." This goal is aligned with the target in the Muscat Agreement adopted at the UNESCO 2014 Global Education for All Meeting.

The Report reflects the following four "critical shifts" that "will make the coming fifteen-year period, 2015–2030, different from the MDG period through to 2015: (i) a drastically higher human impact on the physical Earth; (ii) rapid technological change; (iii) increasing inequality; and (iv) a growing diffusion and complexity of governance" (United Nations, n.d.).

Though education appears in Goal 4 of the list of 17 goals as a separate goal, education is important to all 17 goals (as it was to the entire 40 chapters of Agenda 21). That is the case because **sustainability in essence poses an educational challenge for humankind** (with the emphasis in education placed on learning rather than teaching): ***can we learn to live more sustainably on this planet?***

Teaching and teachers do have an important role in supporting the requisite sustainability learning process but their principal role is no longer simply to transmit knowledge to students. "Education is not about filling a pail it is about lighting a fire." In the digital age of the 21st century, teachers cannot possibly expect to be the omniscient source of knowledge. Their role instead is to inspire and guide their students-as-learners. Unfortunately, this is not the way most teachers have been educated to teach. Conventional approaches to teaching must be modified for the 21st century. As the OECD points out, "…there is a large gap – perhaps even a chasm – between the evidence on effective learning environments for the 21st century and established practice in today's schools and classrooms" (Milton, 2012). A new pedagogy of "transformative education" must replace the "transmission model" of teaching and learning that continues as the dominant practice in most schools in the world.

What has changed to the point that we require a new pedagogy? First, new research has emerged on the human brain and how we learn. Second, because we are now living in a digital age, today's youth are being "hard wired to the digital landscape within which they live" (Robinson, 2001). Third, evidence points to a crisis of disengagement from traditional teaching/learning approaches. Recent research has shown that only 37% of Canadian students still feel engaged by Grade 12; and that 98% of US high school students state that they find school "boring" (Canadian Education Association, n.d.).

The good news is that nearly all discussions of twenty first century education agrees: "traditional" education in which the teacher transmits knowledge to students, must give way to "transformational" education in which the teacher facilitates the acquisition of skills and competences in addition to essential values and knowledge. The teacher serves as guide/learning coach (G. Aikenhead, personal communication, May 13, 2013).

Typically, transformational pedagogy is seen to include the following features:

- Action-oriented, inquiry-based learning
- Systems-based learning
- Integrated, holistic approaches
- Creative use of technology

Typically missing from the twenty-first century education agenda, however, is attention to the sustainability context of social and environmental challenges that lie ahead, and acknowledgement of the existence of planetary limits to old style economic growth (Babad, 2013). These sustainability imperatives have convinced leading businesses (including of course the WBCSD) and business educators to call for a shift from a "brown economy" to a "green economy," to 21st century sustainable enterprise (Bapna & Talberth, 2011).

How do we get there from here? WBCSD outlines nine "pathways" that could lead to the more sustainable world they envision. "The nine areas covered are values and behaviors, human development, economy, agriculture, forests, energy and power, buildings, mobility and materials." The report goes on to explain that the "pathway and its elements neither prescribe nor predict, but are plausible stories the companies have created by 'backcasting', working back from the vision for 2050 and identifying the changes needed to reach it" (World Business Council for Sustainable Development, 2012, p. 10). Moreover, we would need to start using "true value economics" to measure "progress" not just in terms of economic data (especially GDP, which leaves out or distorts important economic phenomena) but also in terms of environmental and social impacts (Anielski, 2016).

By helping develop sustainability mindsets, education can and must contribute to the re-direction of economic activity in support of the vision and pathways (Spence, 2012). Without explicitly referencing ESD, *Vision 2050* (2010) calls for its equivalent to be widely embedded:

> ***Educational content for a sustainable world****. Sustainability will be embedded into educational content. This will help encourage a change in the way people understand their social, technological, ecological and political environments. Besides reading and writing, additional types of literacy will be taught, with environmental and societal benefits. Natural literacy, for example, will catalyze a desire to protect and restore nature.* (p. xx).

How realistic is the hope that a sustainable economy will emerge? The exciting reality is that a number of "green shoots" have already appeared. Several trends are converging in the same direction. In the US a non-profit named "B-Lab" has been hard at work encouraging the evolution from a twentieth century shareholder-style economy to a *stakeholder* economy which is more appropriate for the current century. The essence of the change concerns the purpose of corporations. Current corporate law requires companies to maximize shareholder value regardless of the consequences. This puts in place strong incentives to externalize costs wherever possible: damage to the environment or the local community is kept off the books.

By contrast a new category of company called a "B-Corp" (the B stands for Benefits) operate under a different code of ethics and behavior reflected in the following "Declaration of Interdependence":

> *That we must be the change we seek in the world.*
>
> *That all business ought to be conducted as if people and place mattered.*
>
> *That, through their products, practices, and profits, businesses should aspire to do no harm and benefit all.*
>
> *To do so, requires that we act with the understanding that we are each dependent upon another and thus responsible for one another and future generations.*

The backbone of the B-corp movement (which in some states has required special legislation to make them legal) is a strong set of standards and rigorous monitoring by B-lab to ensure that the company has embedded the commitment to sustainability in its articles of incorporation, policies and practices. To date more than 500 US companies have earned B-corp certification, and 27 Canadian companies have also been certified.

Part and parcel of the emergence of the green economy is the growth of green jobs, defined by the United Nations Environment Program (Worldwatch Institute, 2008) as,

> *work in agricultural, manufacturing, research and development (R & D), administrative, and service activities that contribute(s) substantially to preserving or restoring environmental quality. Specifically, but not exclusively, this includes jobs that help to protect ecosystems and biodiversity; reduce energy, materials, and water consumption through high efficiency strategies; de-carbonize the economy; and minimize or altogether avoid generation of all forms of waste and pollution.* (pg.).

Clearly the labor market is changing and employers are looking for employees with sustainability skills and understanding. Colleges and Universities are beginning to incorporate sustainability into their programs. From MBAs in sustainable-business practices to programs that give students the technical training necessary to operate wind turbines, etc. K-12 education needs to provide the SD foundation for this new reality in order for students to be better prepared for post-secondary education, entry into the labour market and in general, contributing to a more sustainable society.

Despite the impact on unemployment in the US of the Great Recession there is encouraging data on the growth of the green economy and green jobs. The US Bureau of Labor Statistics' most recent report (2010–2011) indicates that the growth of green jobs exceeded any other sector's. Many of these jobs are in areas of the economy served by Technical and Vocational Education and Training (TVET). UNESCO has put major emphasis on "greening TVET", and a number of Canadian educational jurisdictions are doing likewise.

Implications for ESD and Canadian Education

The Education for the 21st century discourse arose initially through the work of UNESCO (the Delors Report) and the OECD (Millennium Learning Project). It gained prominence in the US through the work of an organization called Partnership for the 21st century (P21).

With sponsorship of leading IT companies like Microsoft, Intel and Cisco, the P21 initiative emphasizes information technology as the key to competitiveness and economic success. Its list of relevant skills (all of which are important for ESD as well) include:

a. **Ways of thinking**. Creativity, critical thinking, problem-solving, decision-making and learning,
b. **Ways of working.** Communication and collaboration,
c. **Tools for working**. Information and communications technology (ICT) and information literacy.

CMEC and several Ministries of Education in Canada developed ideas about twenty-first century education but the best and most comprehensive work has been carried about by an NGO called C21, which has published a paper entitled "Shifting Minds" The focus of most of the work on Canada has been on encouraging transformational pedagogy and a commitment to enable students to be more competitive in the global economy.

Although writings on 21st century education seldom reference ESD, the sustainability context must be central to twenty first century education. Moreover, the approach to business must be just as transformational as the approach to pedagogy. Students need to learn about and develop skills relevant to the emerging green economy not just the "old" business model of the 20th century, because their innovation and creativity will help the new form of sustainable enterprise emerge, for example by "developing the new technologies for a sustainable planet and affordable health care" (Wagner 2012, p. 3). ESD can help fill this gap.

This opens an exciting opportunity to connect the discourses on ESD and on 21st century education, particularly around their common promotion of transformational pedagogy (Kozak & Elliot, 2014), their common endorsement of various skill sets

including "skills for living in the world" which is the fourth set of skills identified by P21: **Skills for living in the world**. Citizenship, life and career, and personal and social responsibility (Kozak & Elliot, 2014).

We need to prepare students not only for employment in a sustainable economy, but also with the skills and values that will allow them to live sustainable lifestyles on this planet. This entails encouraging strong personal development as well as promoting responsible citizenship. Once again, an ESD perspective can enrich the discussion of twenty first century education.

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