Measuring the Prevalence of Ecopedagogy in the Manitoba Senior Years Curriculum: A Critical Content Analysis

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Abstract: The purpose of this study is to uncover whether the Manitoba Senior Years curricula made compulsory for graduation are sufficiently meeting the needs of learners, situated in the global efforts to both tackle and adapt to climate change. Crucially, the United Nations has repeatedly identified education, specifically public education as humankind's best opportunity to raise a generation of environmentally-conscious students capable of taking on these challenges. As curriculum is developed and published by the Provincial Government in Manitoba and sets the agenda of learning in the Manitoba classroom, it is essential that curriculum address these planetary needs. Through a critical content analysis methodology, this journal article will apply codes drawn from the Earth Charter (2000) to 29 compulsory and elective Manitoba Senior Years curricula to gauge the extent that learners are exposed to environmental content. An analysis and three recommendations aimed at schools and the Province of Manitoba to move towards aligning with the Earth Charter (2000) will conclude the study.

Keywords: environmental education, ecopedagogy, curriculum, content analysis, Earth Charter

Introduction

Whether you have been reading global news reports, following ongoing national political dialogue over the carbon tax, or trying to escape the news by venturing outside, it has been hard to ignore the increasingly prominent impact that climate change has been having on our planet. In Canada, you don't need to have been impacted by the arctic fires (Tait, 2019), dealt with double the average severe weather reports in Alberta (Ward, 2019), or been displaced by flooding in Eastern Canada (Eschner, 2019) to see that all is not well. You may have had difficulty getting away from the heat this summer, with the news that July 2019 declared globally the hottest month since records began (Fountain, 2019). Earlier in 2019, Canada was reported to be warming at twice the global rate (CBC News, 2019). All this while setting aside the consequences of ecological destruction accompanying an increased pumping of carbon into our atmosphere.

In my current home of Manitoba, we are far from secure from the impacts of climate change. While in January of any year, the idea of 'global warming' might lead to a witticism of 'bring it on!' digging deeper uncovers further incoming repercussions on the Manitoba environment than just warmer winters. Researcher David Schindler writing in 2010 argues that,

> positive effects of the warming will be few, and disadvantages many. Agriculture will be much diminished, with the advantages of a warmer and longer growing season more than offset by a lack of water. Prairie forest boundaries will be pushed far to the north, largely the result of increased fires, some following extensive insect outbreaks. Precipitation events will be fewer, but more intense. Transportation by water, and tourism and recreation on water resources, will be almost non-existent (Schindler in Sauchyn, Diaz, & Kulshreshtha, 2010, p.x).

Manitoba Climate Change Connection's Curt Hull suggested that "When the rest of the world is in turmoil because of tornadoes, hurricanes, floods, droughts, and mass migrations because of climate, the economic consequences are really quite severe. That's what we're likely to feel in Manitoba" (Petz, 2018, n.p.).

The purpose of this study is to draw question of what role education can play in mitigating and adapting to the climate crisis. Specifically, this study will seek to answer is the extent to which the Manitoba Senior Years curriculum is effectively supporting youth enrolled in public education in cultivating knowledge, attitudes, and actions to aid in their understanding of the escalating environmental crisis and their role in it. If as Kress (2003, p.16) argues, that curriculum aims to transmit the knowledge, skills, meanings and values today as a socializing force for the future, then it is vitally important to understand whether the Manitoba Senior Years curricula is geared toward cultivating 'ecopedagogy' (a term I will detail later on) in Manitoban youth.

Theoretical Foundations

The Earth Charter

The United Nations has repeatedly identified education, specifically K-12, as humankind's best opportunity to raise a generation of ecologically conscious youth capable of taking on these challenges. In 1987 the United Nations released *Our Common Future*, better known as the Brundtland Report, with education cited as a key component in developing "changes in attitudes, in social values, and aspirations" (World Commission on Environment and Development, 1987, n.p.). The report considered that alongside non-governmental organizations and the scientific community, educational institutions "will play a crucial part in putting the world onto sustainable development paths, in laying the groundwork for Our Common Future" (World Commission on Environment and Development, 1987, n.p).

The Brundtland Report (1987) served as a starting point for a larger conversation amongst organizations educational institutions around the world towards a common objective. Ultimately it led to the creation of a charter to represent the values of *Our Common Future*, which became the Earth Charter (2000). The Charter was the result of an extensive consultation process with over 5000 individuals, culminating in "a global consensus statement of values and principles for a sustainable future," and a call for unity "to bring forth a sustainable global society founded on respect for nature, universal human rights, economic justice, and a culture of peace" (Earth Charter, 2000, n.p.).

Critical pedagogists such as Richard Kahn, Moacir Gadotti, David Grunewald, and Richard Clugston view the Earth Charter (2000) as a valuable benchmark from which developing environmentally sound pedagogy can orient. In outlining how educators might utilize the Earth Charter (2000) in their practice, Clugston and Calder (1999) identify two roles: firstly, it be employed as a framework and source of content for education for sustainable living, and secondly as a catalyst for promoting an ongoing multi-sectional dialogue on global ethics. In other words, the Earth Charter (2000) blends education for sustainable living with a critical perspective on contemporary society. Gruenewald (2004) praised it for being "able to negotiate the complex ecological interactions between science, politics, and culture, between social and ecological systems, and their impact on human and nonhuman life" (Gruenewald, 2004, p. 94).

Ecopedagogy

Kahn (2009) developed the term 'ecopedagogy' as an attempt to blend critical pedagogy and education for the environment. As Kahn correctly asserts, if we are to 'overcome previous theoretical limitations' and move both terms towards a more inclusive critical and transformative approach to education, a uniting of these concerns is necessary (Kahn, 2009). Ecopedagogy, writes Kahn

> is the key process by which we might fend off the worst aspects of today's globalization, and realize more of the utopia in which non-human animals, oppressed peoples, and the planet are not wholly exterminated, but rather ecumenically brought into a new ecological society generally" (Kahn, 2009, p.525).

Further, it is an effort to,

> interpolate quintessentially Freirian aims of the humanization of experience and the achievement of a just and free world with a future-oriented ecological politics that militantly opposes the globalization of neoliberalism and imperialism, on the one hand, and attempts to foment collective ecoliteracy and realize culturally relevant forms of knowledge grounded in normative concepts such as sustainability, planetarity, and biophilia on the other" (Kahn, 2010, p.18).

In education there are a range of terms that can label learning around environmental issues inside (or outside) the classroom, including *environmental education*, *ecoliteracy*, *education for sustainable development*, or *education for sustainable living* to name but a few. As seen in Table 1, these terms lack critical perspective and failure to name our dominant economic system of capitalism instrumental in the creation of the climate crisis (which has been unpacked in detail by Klein, 2014). Ecopedagogy is explicitly anti-capitalist, challenging the cultural hegemonic practice of public education as a human capital factory that perpetuates a continuation and expansion of consumer culture and widening of the human/nature divide.

Table 1: Terms pertaining to instruction of environmentalism in education

Environmental Education	Aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to solve these problems, and motivated to work towards their solution (Stapp, 1969).
Ecoliteracy	The ecologically literate person as one who possesses knowledge of the interrelatedness of humans, human society and the natural environment. The ecoliterate citizen sees and understands the world in 'systems', which is awareness of the carrying capacity, overshoot, Liebig's Law of the minimum, thermodynamics, trophic levels, energetics, and succession. To have ecoliteracy is to have a strong knowledge of the ways in which people and societies have had a destructive impact on the planet (Orr, 1992).
Education for Sustainable Development	Lester Brown, founder of the Worldwatch Institute, introduced the concept of sustainability in the early 1980s and defined a sustainable society as one that is able to satisfy its needs without diminishing the chances of future generations. Sustainable development has three components: (a) environment; (b) health and well-being; and (c) economy. If you consider the three to be overlapping circles of the same size, the area of overlap in the center is the human quality of life. As the environment, society, and economy become more aligned, the area of overlap increases, and so does human quality of life. (McKeown, 2013).
Education for Sustainable Living	Supports the health and quality of life of present and future generations while living within the limits of its social and natural systems. It recognizes the need for justice, and for physical, emotional, intellectual, cultural, and spiritual sustenance (Stone, 2010).

I am in agreement with Shellenberger and Nordhaus (2009) who wrote critically on the failures of the last decades in *The Death of Environmentalism*, outlining that they are "convinced that modern environmentalism, with all of its unexamined assumptions, outdated concepts, and exhausted strategies, must die so that something new can live" (p.10). I see ecopedagogy as what should come next, and throughout this study will use it as a framework along with a critical content analysis methodology to undertake my work.

Aim of Study

Using the Earth Charter (2000) and the theory of ecopedagogy can provide a format for evaluating curriculum documents in an effort to gauge the environmental content learners may be exposed to in any given high school course. Every public school teacher in Manitoba is beholden to the mandated curriculum. Given the current relationship that humankind has with the planet, the current trends in society, and the view that education can play a role in encouraging youth to reconnect with nature and prepare for a warming planet, the purpose of this study is to uncover whether the Manitoba Senior Years curricula are meeting our needs as a province to develop positive attitudes, knowledge and actions in youth on Earth.

If key elements of the Earth Charter (2000), considered a vital source for moving towards a sustainable future are ignored, or even contradicted, this will have ramifications for the environment and well-being of Manitoba. Decisions on what content to include in a curriculum document are political. It is my view that if the Province of

Manitoba is found to be excluding education for environment completely, limit to tokenism, or outright contradicting best practices as outlined by the Earth Charter (2000), then this would be one done with intent.

Literature Review

Broadly speaking research on education for the environment in Manitoba can be divided into two categories: firstly, studies seeking to understand how effectively education for environment can or has been implemented into schools; and secondly, studies gauging student attitudes and behaviours as a result of education for environment programming.

In brief, these studies include Metz et al. (2010) who contrasted the ESD learning experiences of a school in Costa Rica with that of one in Winnipeg; Belton (2013) who used a narrative inquiry methodology to interview leaders in education for sustainable development (ESD) in England, Australia and Canada (predominantly in Winnipeg); similarly, Jacques (2012) undertook a phenomenological study interviewing six Winnipeg high school leaders in ESD; Kraljevic (2011) used a mixed-methods study to conclude whether the Manitoba Grade 10 Science curriculum was leading to improved knowledge and attitudes pertaining to the environment; Eckton (2016) undertook a participatory action research study at a Winnipeg high school to collect data on student attitudes and values pertaining to education for sustainable living (ESL); similarly, Michalos et al. (2015) surveyed 10% of Manitoban youth enrolled in Grade 10 Social Studies and Science, using a five-point scale to gauge learners knowledge, attitudes and behaviors in ESD; and Babiuk & Falkenberg (2010) undertook the largest study of ESD in Manitoba, surveying teachers, administrators and superintendents through interviews on environmental education in Manitoba.

Two conclusions can be drawn from these studies. Firstly, the siloing of subjects into separate curriculum areas prevents effective teaching for education for environment (Babiuk & Falkenberg, 2010; Belton, 2013; Eckton, 2016; Jacques, 2012; Kraljevic, 2011; Metz et al., 2010). Secondly, many educators found that either an overcrowded or overly restrictive curriculum created a challenging environment for effective teaching of education for sustainable development (Babiuk & Falkenberg, 2010; Belton, 2013; Eckton, 2016; Hart; 2002; Metz et al., 2010; Michalos et al., 2015; Jacques; 2012). As a result, in these studies the authors highlight that despite growing concern regarding the human impacts on the planet over the last decades, there is no evidence of improved environmental knowledge or positive behaviors in Manitoba learners at the senior years level (Babiuk & Falkenberg, 2010; Belton, 2013; Eckton, 2016; Hart, 2002; Jacques, 2012; Kraljevic, 2011; Metz et al., 2010; Michalos et al., 2015).

While these studies have shone a light on the work that needs to be done to improve education for environment, none have directly sought to critique and measure the quality of curriculum that directly informs the teacher's instruction. Studies from Babiuk and Falkenberg (2010), Eckton (2015), Kraljevic (2012), and Michalos et. al (2015) have aimed to gauge student knowledge or actions as a result of the current curriculum, and likewise studies from Babiuk and Falkenberg (2010) Belton (2013), Jacques (2012) have attempted to see what schools and classrooms are doing in an effort to expand education for environment. From my literature review, no studies to date have critically analyzed the Manitoba High School curriculum to measure against such a benchmark as the Earth Charter (2000).

Methodology

This research study employed a critical content analysis methodology. Content analysis (CA) is a research method that aims to draw inferences from text so a researcher may gain knowledge and understanding of a topic or phenomenon (Hsieh & Shannon, 2005). To reach this goal CA undertakes "careful, detailed, systematic examination of a particular body of material in an effort to identify patterns, themes, biases, and meanings" (Berg & Lune, 2012, p. 349). The raw material for CA can be any form of document or communication medium (Gall, Borg, & Gall, 1996), including verbal, print, electronic, and obtained from narrative responses, surveys, interviews, focus groups, observations, or print media such as articles, books or manuals (Hsieh & Shannon, 2005). Flick (2002) claims that content analysis is one of the 'classical procedures' for analyzing textual material. For a study critically analyzing a selection of Manitoba curriculum documents, content analysis was a methodological approach that fit the material under consideration.

Manifest and latent content analysis are forms of summative content analysis. Manifest content analysis is a quantitative research method that employs coding to the content under analysis, with a view to count the appearance

of words, phrases or sentences contained within. In a second step, manifest content analysis the researcher makes "replicable and valid inferences by applying empirical and statistical methods to textual material" (Woods & Catanzaro, 1988, p. 437). Coding, where a word, word sense, sentence, passage, or whole text within a document is searched and then catalogued, aids in this process. Manifest content analysis assumes that a high frequency of particular word count means that the author values said word and its meaning - a note of vital importance when analyzing the data.

Within manifest content analysis I undertook three steps. Firstly, I established a list of 29 Manitoba curriculum documents from the senior years as the study sample. These documents covered all subject areas that students could meet content connected to ecopedagogy between Grades 9 and 12, including English Language Arts, Physical/Health Education, Science, Technology Education (including Home Economics and Food & Nutrition), Family Studies, most Social Studies. Owing to the perceived low likelihood of content connected to ecopedagogy, the selection excluded Mathematics, optional credits, and a 20-year rule of exclusion for not updated curriculum documents. Secondly, a list of 51 codes (including synonyms numbered 100) were pulled from the Earth Charter (2000). These were key words that conveyed the 'who' and 'what' required to address attitudes, knowledge and actions according to the Earth Charter (2000). Thirdly, the Manitoba curriculum documents were analyzed for frequency of codes. For every instance of the code within the curriculum document, the sentence (or paragraph if context is required to explain the reason for the code being used) was catalogued. Code occurrence in headings, tables and text was considered equal, with a word appearing once in a heading and then in the following text counted twice.

Latent content analysis is a qualitative research method in which the researcher "views each passage of the textual material within the context of the entire text" (Woods & Catanzaro, 1988, p.437). Latent content analysis seeks to understand not what word or words are included in a text, but what is implicit or explicit in their use. Researchers including Weber (1990), Babbie (2001), and Berg and Lune (2012) state that the best approach is for a researcher to use both quantitative (manifest) and qualitative (latent) when conducting content analysis studies.

Within latent content analysis I compared and contrasted each use of key word within the curriculum documents against its use within the Earth Charter (2000) ensuring that the context to which the code was used in the Earth Charter (2000), met that of the curriculum document. For example, latent content analysis was undertaken to ensure *environment* was used in a 'nature' sense, rather than 'learning environment'. The code was tabulated alongside the sentence (or paragraph) taken from the curriculum documents. Secondly, once all curriculum documents were scanned for codes and tabulated, a numeric value to represent the number of coded words, and their respective frequency of use was totaled (see Appendix A). The third and final step was to make inferences from the study.

Findings

A variety of analyses were drawn from the data. Firstly, the code occurrence (CO) data was cut and isolated based on the Manitoba curriculum document (MCD), subject area, grade level and individual CO across all curriculum documents. Secondly, the data was analyzed based on these grouped sections. Cutting and analyzing the data in a variety of ways allowed for isolating variables such as Grades, subject type (such as English Language Arts, Social Studies, Science), and length of curriculum document (which varied between 7 and over 600 pages), allowing for more robust conclusions to be drawn from the data.

In total 12,245 codes were identified across the 29 MCD. All 51 codes or 100 codes including synonyms were present across the MCD. CO varied greatly across the MCD. Grouping all the MCD together, at the lower end there was only one CO of *precautionary principle* (defined as resisting the use or introduction of a product or process until its environmental safety has been proven), and at the higher end 1002 CO of *community / communities*. Other high frequency CO were *environment / environmental* (971), *politics / political / government / governance* (777), and *world / planet* (681). There were 12 codes present less than 50 times across the MCD, namely: *humanity* (18), *humane / human development* (14), *resilience* (20), *soil* (36), *air* (15), *care / compassion / love* (48), *spiritual* (39), *conservation / restoration / rehabilitation / renewal* (38), *wild* (5), *minerals / fossil fuels* (33), *pollution / toxic* (29), and *precautionary principle* (1).

There was also significant variance in the number of CO between MCD. Grade 12 Global Issues had the highest number of CO (2553), followed by Grade 10 Social Studies (1408) and Grade 11 Social Studies (943), and Grade 12 Current Topics in First Nations, Metis and Inuit Studies (918). There were seven MCD with less than 100 CO, namely: Grade 11-12 Environmental Design (86), Grade 12 Applied Family Studies (52), Grade 12 Interdisciplinary Topics in Science (21) as well as all five English Language Arts curriculum: Grade 9-12 Draft English Language Arts curriculum (57), Grade 9 ELA (57), Grade 10 ELA (46), Grade 11 ELA (74), Grade 12 ELA (48).

Themes emerging from CO separated by Grade level show the weakness of MCD at the Grade 9 and 10 level, specifically the under-representation of codes in Science and Social Studies. At present, these Grade 9 and 10 courses represent four of the five compulsory courses for Manitoba Senior Years in Social Studies and Science and therefore it is critical that the MCD contain high CO. Grade 9 Social Studies (189) and Grade 9 Science (142) had low total CO. CO separated by average codes per page allowed for a fairer point of contrast between documents with less than 200 pages and over 600 pages. Cutting the data this way showed Social Studies averaging 0.43 codes per page, and Science 0.37 average codes per page. Grade 10 Science (131) was even lower in CO ranking, averaging 0.21 codes per page – the lowest of any MCD in this study.

Another theme that emerged was the discrepancy between code meaning in CO. Codes such as *world / planet* (681), *culture* (471), *well-being / health* (498), *environment / environmental* (971), *society* (501), *sustainable / sustainability* (490), *dignity / respect* (221), and *community / communities* (1002) appeared across the majority of MCD, and in many of the MCD registered high CO. These are a diverse list of codes, but in the latent content analysis stage of methodology it became clear that other than *sustainable / sustainability*, none drew a link between dominant economic systems and environmental degradation. This finding led to a distinction between 'hard' and 'soft' codes - a determination that had to be made in aligning with a theoretical approach of ecopedagogy. Hard codes resonate with ecopedagogical thinking and challenge the status quo, while soft codes do not. Examples of hard codes included *human rights / rights, justice / injustice, consumption / consume, resilience, minerals / fossil fuels, pollution / toxic* or *precautionary principle* - all of which were relatively low in CO, and not consistently present across Grade and subject areas in the MCD. Soft codes such as *world / planet*, *society*, and *community / communities* are not critical in their use and were far more prevalent across MCD.

In addition, the MCD skirt around identification of individuals, groups and dominant processes that contravene the ECP by encouraging teachers to provide students with space to undertake inquiry into issues. However, what this fails to do is demand educators to provide learning experiences that make explicit the actors and processes in contemporary society that undermine the ECP. The increasing encroachment of corporations into the classroom with packaged lesson plans preys on educators to provide learning experiences, while almost guaranteeing that the suppliers of these materials do not come under question (Tahirali, 2012, p.8).

What many of these MCD offer is either constraints or opportunities for educators to teach content related to the Earth Charter (2000). Grade 9, 10, 11 and 12 ELA and Grade 9/10, 11 and 12 Physical / Health Education MCD offer relatively few opportunities, unless the courses can be integrated with other subjects such as Technology Education, Social Studies or Science. On the other hand, there are a number of very strong MCD that align well with the Earth Charter Principles (ECP). In this category I would include Grade 12 Global Issues, Grade 12 Current Topics in First Nations, Metis and Inuit Studies, Grade 11 Topics in Science, and Grade 12 Interdisciplinary Topics in Science. These MCD either have high CO, high average codes per page, provide opportunities for students to explore issues connected to the ECP, or include an action component requiring learners to demonstrate learning through community-based projects.

Collectively summarizing the Senior Years Manitoba curriculum documents in their ability to effectively provide a platform for educators to provide experiences that connect to ecopedagogy is not possible, as there is a large amount of variance between the documents. Several of them, such as Grade 12 Global Issues and Grade 12 Current Topics in First Nations, Metis and Inuit Studies contain a high number of codes. Inquiry based courses such as Grade 11 Topics in Science and Grade 12 Interdisciplinary Topics in Science contain a high number of average number of

codes per page and provide space for educators to guide students towards research projects that tackle many of the issues contained within the ECP.

Based on my research, an overall black or white conclusion on the ability of the MCD to support ecopedagogy in Manitoba is not possible. Rather, I accept that there are a number of things that some of the courses do well, but that to move forward and increase the exposure to ecopedagogy, the expression of Earth Charter (2000) related content needs to be expanded into more courses, with increased contact hours for learners.

Recommendations

Based on data gathered from my research I developed three recommendations aimed at the systemic level. *Recommendation 1* speaks to school administration, with *Recommendation 2* and *Recommendation 3* directed at the Province of Manitoba. Six further recommendations based on data from the study in conjunction research considered in the Literature Review can be found along with a fuller account of the study in my thesis (Burton, 2019).

Recommendation 1: Schools should look to increase their capacity for offering Technology Education courses or skills across grade levels.

Maguire and McCloat (2017) outline how Home Economics (named Technology Education in Manitoba) has "distinct qualities and progressive potential in enabling a future-oriented education and practice towards global sustainable well-being" (p.165). The subject area in Manitoba includes Family Studies, Food and Nutrition, Human Ecology, Textile Art and Design and Environmental Design courses. As a discipline, Technology Education seeks to achieve healthy and sustainable living for individuals, families and societies (Maguire & McCloat, 2017, p.166). This is a premise that aligns very closely with the Earth Charter (2000), specifically the prologue which states, "life often involves tensions between important values. This can mean difficult choices... we must find ways to harmonize diversity with unity, the exercise of freedom with the common good, short-term objectives with long-term goals" (Earth Charter, 2000).

McLaren (2015) outlines that Technology Education provides space for learners to,

> apply designerly thinking through action based challenges which explore issues and opportunities, seeking to address design challenges which offer engagement to enhance, alter, change, innovate; recognise the integration and inter-dependency of people, place, culture, society, economy, industry, and environment through craft, design, engineering and developments over time; critique consequences of proposed and / or existing actions, systems, environments and artefacts; participate in meaningful and authentic contexts; identify complexity, issues and scenario-based design challenges; and recognise and select indigenous and appropriate technologies (McLaren in Stables and Keirl, Eds., 2015, p.147).

It is clear from this selected list that there are multiple components which can be pulled from Technology Education curricula that align with a variety of the principles of the Earth Charter (2000).

A relatively new area of research in education pertains to the notion of transition skills. Stephen Quilley from the University of Waterloo has written extensively about the practice that focuses learning around artisan skills such as crafts in woodland, building, field, workshop, textile and domestic areas (Quilley, 2009, p.47-48). Examples of these include carpentry, stone-walling, iron-forging, pottery, knitting, sewing and cooking. This approach to education is linked to transition communities - a growing number of communities that are moving away from a fossil fuel-based economy, towards more sustainable modes of life, so that they are more prepared for a post-oil world (more of this can be found in Rob Hopkins text, *The Transition Handbook*, 2008). Many of these skills can be found in the Technology Education classroom - skills that provide a sustainable alternative to consumer culture. Any conversation with someone a generation older leads us to realize that in Western society we are losing this institutional memory of creating, fixing and reusing that was a normal practice in the past. Technology Education could provide that important link.

Findings from my study suggest that there is a high average code occurrence per page in the Technology Education curriculum documents, which also includes high CO for *human rights / rights* (12), *justice / injustice* (11),

resilience (17), *consume / consumption* (29), *sustainable / sustainability* (30), *action / praxis* (11), and *reduce / reuse / recycle* (12). Schools should ensure that they are capable of both offering and attracting learners to Technology Education courses, particularly as they are all elective courses at the Senior Years level in Manitoba. Schools may also decide to move towards making one or more Technology Education courses as compulsory for graduation, or seek to integrate elements of the Technology Education MCD into other courses, such as English Language Arts, Physical / Health Education, Social Studies, Mathematics or Science.

Recommendation 2: The Government of Manitoba should seek to reform the Grade 9 and 10 Social Studies and Grade 9 Science curriculum.

An emergent theme from the data was the weakness of the Grade 9 and 10 Social Studies and Grade 9 Science curriculum owing to their low CO and average CO per page; this has been echoed by the previous work of Kraljevic (2011), Jacques (2012), Belton (2013), Michalos et al. (2015), Eckton (2015), Henderson (2016) and the broader study by Babiuk and Falkenberg (2010). These authors have targeted the Grade 9 and 10 Social Studies and in particular the Grade 10 Science curriculum as not fit for its purpose as a flagship course for Education for Sustainable Development. As a result, I would advocate that these courses be redesigned using the Grade 12 Global Issues course as a model, with specific focus on providing more space for teacher discretion in content, opportunities for student inquiry, and community action projects. A support document for teachers that uses the Earth Charter (2000) as its foundation should be a starting point for learners.

Metz et al., (2010) argue that Grade 10 Social Studies and Grade 10 Science should be redesigned so that they merge into a larger course. Learning could be built vertically on the Grade 9 Social Studies and Science courses and include focuses on life, the natural world, systems thinking, resilience, health and human well-being, the biosphere, ecological systems, consumption and consumerism, sustainable living, conservation / restoration / rehabilitation, renewable energy, and the notion of the precautionary principle. Focuses should include local content curated by teachers, but allowing space for student inquiry. Teachers would need to be provided with resources that identify and critique the root causes of environmental degradation, such as an analysis of racism, sexism, gender, capitalism, consumerism, colonialism, dependency on oil, as well as political ideologies that exclude. The expectation should be that learners are provided with an extensive period of time for community action projects.

Recommendation 3: The Government of Manitoba should move towards making Grade 12 Global Issues a compulsory course for graduation.

One course that should be made compulsory for graduation in Manitoba is Grade 12 Global Issues. Owing to the high CO and average CO per page, making the Global Issues course a part of every learners' graduation plan would be a meaningful policy to implement, either at the school, Divisional or Provincial level (for example, Maples Met School in Seven Oaks School Division enrolls all learners in the course, integrating it with Grade 12 English Language Arts, which is compulsory for graduation). It bears repeating that according to the results of my study, Grade 12 Global Issues represents the best example of exposure to content closely associated with the Earth Charter (2000), and does so while allowing learners the opportunity to pursue learning that aligns with their interests and encourages an *action / praxis* component.

Making Global Issues a compulsory course for graduation would bring the number of compulsory courses for graduation in Manitoba from 17 to 18, and compulsory courses at the Grade 12 level to four (alongside English Language Arts, Physical / Health Education and a Mathematics course). This would still provide students in Manitoba the chance to take 12 elective courses in their four years of high school. It would also mean that a Social Studies course is compulsory at each of the four Senior Years levels (along with Grade 9 Social Studies, Grade 10 Geography and Grade 11 History of Canada). Individual schools may want to explore the possibility of making Grade 12 Global Issues compulsory themselves, without direction from the Province of Manitoba. Either way, according to the data from my study, I see this course is too valuable for exposure to environmental content for learners to opt out.

Conclusion

A knowledge-gap exists in our understanding of the extent to which Manitoba curriculum at the Senior Years is directing teachers to support learners to develop the knowledge, attitudes and actions in environmental consciousness. This modest study utilizing ecopedagogy and the Earth Charter (2000) has sought to both draw attention to and provide data to support the claim that more needs to be done. Limitations of this critical content analysis include drawing overly deterministic conclusions from an interpretive methodology, the use of the Earth Charter as a metric for measuring content in curriculum documents, and assumes educators are actually following and implementing curriculum as document in the classroom. Nevertheless, it is my hope that this study can spark discussion and further consideration about the content and goals of Provincially mandated learning outcomes in our classrooms.

In recent history we have seen the impact of adopting a framework designed outside of education that has impacted instruction within the classroom. In the publication of the Truth and Reconciliation Commission of Canada: Calls to Action (2015), policy makers were provided with a framework from which to redesign and reorient education in Canada. The report led to a variety of institutions to rally behind a critical common goal: reconciliation between First Nations peoples and settlers on the territory now called Canada. The Calls to Action outlined a number of different policy suggestions for different areas of Canadian society, amongst them Child Welfare, Health, Language and Culture, and Education.

What is particularly striking here is that the TRC Calls to Action emerged as the result of a societal issue (of note: Residential Schools, the Sixties Scoop, Intergenerational Trauma) with a framework to address changing knowledge, attitudes and actions through education resulting. In many ways, the TRC Calls to Action are an example of what can be achieved when a critical mass of support and accountability meet towards a common goal.

The emergence of the TRC Calls to Action are similar conditions that impetus for the Earth Charter (2000) originated. It is over 30 years since *Our Common Future* (1987) captured the world's attention with their own calls to action. Yet since that time, the planet and its human inhabitants have slid into an ever-increasingly perilous state. The underlying imperative from then remains today, and it can play a crucial role in the rethinking of education in Manitoba.

Imagine: like the TRC Calls to Action, the Earth Charter (2000) became a resource for policy makers to guide their decision making in reforming curriculum? What if School Divisions designed their Mission Statements, and schools curated their yearly School Plan around meeting the criteria of the Earth Charter (2000)? What if Faculties of Education required postsecondary students to implement principles of the Earth Charter (2000) into every lesson plan? What if students within the K-12 public school system were not measured by their ability to regurgitate content that they were 'gifted with' by a classroom teacher, but were measured yearly by their ability to demonstrate knowledge, attitudes and actions that aligned with the Earth Charter (2000)? The Earth Charter (2000) is the radical document that we need in these times to conceptualize our relationship with each other and the planet that sustains us.

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ABOUT THE AUTHOR

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APPENDIX A

Content Analysis Data Chart

Code	Gr 9-12: Draft ELA (May 2017)	Gr 9: ELA	Gr 10: ELA	Gr 11: ELA	Gr 12: ELA	Gr 9-12: Family Studies	Gr 9-12: Food & Nutrition	Gr 9-12: Human Ecology	Gr 9-12: Textile Art & Design	Gr 11-12: Environmental Design	Gr 12: Applied Family Studies	Gr 9-10: Physical/Health Ed	Gr 11: Physical/Health Ed	Gr 12: Physical/Health Ed	Gr 9: Science	Gr 10: Science	Gr 11: Biology	Gr 11: Chemistry	Gr 11: Physics	Gr 11: Topics in Science	Gr 12: Biology	Gr 12: Chemistry	Gr 12: Physics	Gr 12: Interdisc. Topics in Science	Gr 9: Social Studies	Gr 10: Social Studies (Geography)	Gr 11: History of Canada	Gr 12: Current Topics in FN, Metis and Inuit Studies	Gr 12: Global Issues	TOTAL OCCURENCES OF CODE
Earth / land	1	1	0	0	0	0	0	0	0	0	0	9	0	0	29	6	8	21	32	47	8	7	81	0	24	38	17	84	76	489
Humanity	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	15	18
World / planet	7	3	1	5	8	1	3	1	2	0	0	3	16	4	0	14	23	24	34	37	26	12	51	3	98	63	83	18	141	681
Diversity	2	4	1	1	4	6	0	1	0	0	2	13	4	6	5	7	8	7	8	11	8	6	8	0	70	54	36	12	5	289
Culture	4	9	9	8	8	7	2	6	6	5	2	17	0	9	3	1	3	4	6	6	4	2	4	2	132	23	37	116	36	471
Life	5	0	0	0	0	7	0	0	3	0	0	2	34	0	14	10	24	0	14	20	26	7	14	0	36	21	43	19	57	356
Humane / human development	0	0	0	0	0	0	0	0	1	0	0	3	0	0	1	0	0	0	0	0	0	0	0	0	1	6	0	0	2	14
Nature / natural	1	1	0	0	0	0	1	1	3	0	0	1	0	0	0	16	5	37	48	38	18	22	1	16	105	17	19	117		467
Human rights / rights	0	0	0	0	0	9	0	1	0	0	2	0	10	0	0	0	0	1	0	0	0	0	0	0	179	21	70	68	97	458
Justice / injustice / economic justice / social justice	2	0	0	0	0	1	2	1	4	3	0	0	2	0	0	0	2	1	0	3	1	0	1	0	134	17	30	44	63	311
Peace / tolerance / non-violence (nonviolence)	0	0	0	0	0	0	1	1	2	1	1	0	3	0	0	0	0	0	0	2	0	0	0	0	21	4	17	7	64	126
Community / communities	19	24	15	29	11	19	14	16	18	16	11	27	49	56	3	4	17	24	12	16	17	8	10	2	150	88	41	153	133	1002
Resilience	0	0	0	0	0	8	0	1	1	3	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	20
Well-being / health	0	0	0	0	0	58	35	55	7	3	10	17	29	20	3	2	14	9	11	15	8	7	9	1	23	7	15	66	74	498
Biosphere / ecosystem	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	8	2	5	0	5	21	2	2	0	0	0	0	37	84
Ecology / ecological systems / ecological responsibility	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	1	4	0	0	0	4	2	0	0	91	105
Responsibility	0	0	0	0	0	7	1	4	3	3	5	8	22	35	0	1	11	8	1	2	9	4	4	2	24	16	8	10	38	226
Plant / plants / forests / vegetable	0	0	0	0	0	0	0	0	1	0	0	2	0	5	4	0	0	3	1	13	11	0	2	0	0	19	1	5	18	85
Animal / organism	1	0	0	0	0	0	0	0	0	1	0	0	1	0	20	8	5	11	20	6	28	84	3	11	0	0	9	1	2	260
Soil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	1	0	3	0	0	18	0	0	10	36
Water	0	0	0	0	0	0	2	1	0	0	0	6	1	1	0	1	8	55	0	9	6	1	3	0	5	17	0	1	38	155
Air	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	2	0	0	0	3	15
Global	0	0	1	4	1	5	12	8	8	5	0	4	1	0	6	7	7	20	11	15	9	9	12	0	157	95	26	9	109	541
Environment / environmental	6	0	0	0	0	5	10	9	3	1	4	10	4	21	20	27	48	36	81	64	33	32	4	0	68	263	9	10	203	971
Consumption/ consume	0	0	0	0	0	1	7	4	10	7	0	0	1	0	2	0	1	6	0	4	0	0	1	0	47	43	0	1	73	208
Poverty	0	0	0	0	0	1	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	9	3	1	6	46	69
Population	0	0	0	0	0	1	3	0	0	0	0	1	0	0	5	0	1	0	7	0	0	0	0	0	50	31	18	23	59	199
Security	0	0	0	0	0	0	11	0	11	9	0	0	0	1	0	0	1	19	1	0	1	0	1	0	12	0	10	0	24	101
Care / compassion / love	0	0	0	0	0	4	0	0	0	0	1	1	3	7	0	0	3	0	0	0	3	0	0	0	5	6	2	1	12	48
Society	2	0	5	8	4	3	0	0	0	1	0	5	20	6	9	10	16	0	23	37	18	18	20	3	100	28	53	37	75	501
Democratic / democracy	0	0	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	127	46	45	4	21	250
Living	0	0	0	0	0	0	0	0	0	0	0	3	3	0	1	2	3	13	2	13	7	2	2	0	0	0	12	3	63	129
Political / politics / government / governance	0	0	0	1	1	3	1	0	2	2	2	1	8	12	5	1	2	8	4	5	3	2	4	0	189	51	181	122	167	777
Spiritual	0	0	0	0	0	2	0	0	0	0	1	4	0	0	0	0	2	1	1	1	1	0	1	0	0	0	6	15	4	39
Inclusive / inclusivity	0	2	0	1	2	2	0	0	0	0	3	0	3	5	5	0	0	1	0	0	0	1	0	0	0	16	11	7	1	60
Local / locally	0	0	0	4	1	2	5	1	8	4	1	8	12	12	4	5	5	21	6	25	14	6	6	0	68	88	17	20	55	398
Solidarity / kinship / cooperation / cooperate	0	3	1	1	1	1	1	0	1	0	1	3	0	3	0	0	1	1	5	3	5	0	2	0	10	8	8	4	12	75
Ethics / ethical / unethical	1	0	0	4	2	1	4	2	4	2	1	7	12	3	1	0	6	3	4	7	12	3	4	0	9	8	30	3	31	164
Sustainable / sustainability / sustain / sustainable develop	2	0	0	0	0	2	5	7	8	8	0	9	3	5	7	8	15	22	17	34	22	21	17	2	18	59	24	1	174	490
Dignity / respect	1	4	6	3	2	4	2	2	2	2	3	20	20	2	2	2	9	5	6	5	7	1	6	0	26	29	18	15	17	221
Action / praxis	1	2	0	2	0	3	1	2	2	1	2	0	0	7	4	4	9	4	8	12	6	1	8	1	24	61	10	3	51	229
Conservation / restoration / rehabilitation / renewal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	0	0	0	0	0	2	5	4	8	38
Wild	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	3	5
Endangered species / species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	2	1	7	1	19	47	1	1	0	0	0	0	101
Minerals / fossil fuels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	1	1	0	0	0	0	1	6	0	3	33
Precautionary principle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Pollution / toxic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	6	0	5	1	0	0	0	1	3	1	9	29
Reduce / reuse / recycle	0	0	0	0	0	0	5	1	3	3	0	0	0	0	0	0	1	0	1	0	2	0	1	0	0	8	2	1	26	58
Energy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	6	15	1	6	2	4	8	0	1	2	0	0	26	74
Equality / equity	1	0	2	0	0	2	0	1	0	0	0	1	5	0	0	0	1	1	1	1	1	1	1	0	37	19	24	2	25	126
Gender	0	4	2	2	2	4	1	0	1	0	0	2	15	11	1	1	1	1	1	2	2	1	1	0	11	5	14	0	59	144
TOTAL CODE OCCURENCES IN CURRICULUM	57	57	46	74	48	166	126	129	119	86	52	168	289	252	142	131	265	405	293	551	520	181	354	21	189	1408	943	918	2553	