Embedding Environmental Sustainability Education in a Master of Teaching Program: Reflections on Improvisation and Learning-by-Doing at OISE, University of Toronto

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Jeff Stickney*

OISE, University of Toronto

Abstract

The aim of this paper is to share our story about introducing environmental sustainability education (ESE) in an initial teacher education (ITE) program at the Ontario Institute for Studies in Education (OISE) at University of Toronto, starting in 2018. In so far as narratives motivate reflection and action, the goal is to encourage readers to start a conversation with colleagues at their respective institutions (university or college) about how they might do something similar. Consideration is given to how this case fits what Neus (Snowy) Evans refers to as a "systems approach" to implementing ESE in ITE, even if more in retrospect and through improvisation than through foresight and technical prowess.

Keywords: environmental sustainability education, initial teacher education, Master of Teaching Program, Ontario Institute for Studies in Education, climate crisis

* jeff.stickney@utoronto.ca

Introduction: Methods and Intentions—Making the Case for ESE in ITE

In faithfully retelling first- and second-hand accounts of the implementation and teaching of an environmental sustainability education (ESE) course for teacher candidates (TCs), I am employing qualitative, narrative methods of educational research. Drawing from an insider perspective as a practitioner, I make no claims beyond aptness in description, forgoing assertions of neutrality and objectivity, or generalizable findings. The style is expository rather than argumentative or empirical. It is more an exhortation or call to action, with some road mapping of how and why we made this move in our initial teacher education (ITE) program, without being prescriptive or suggesting that this is an exemplary approach. Four years in, it is an evolving story as we improvise to make it work better for our own changing situations (like teaching online 2020-2022). Readers might gainfully draw from this reflection some ideas toward planning their own course, and through implementation experiment with syllabus and lesson design to fit their instructors' aptitudes, and their own students' needs and interests.

Without deflating hopes, it should be noted that teaching ESE with prospective teachers is a rather long-game strategy. Even in today's improved labour market, it can take years before TCs get permanent teaching contracts (if at all). It also takes considerable time for a novice teacher to develop the capacity to teach ESE effectively within various subjects, with the benefits trickling down gradually to students in classrooms who themselves will have to grow up further before having the enhanced agency of being more "enlightened," eco-conscious consumers and citizens. But this age factor is more significant with primary education. Working with the Intermediate/Senior panel, the 14 to 19-year-old students our TCs see on practicum will be voters within the next 4 years or less, and of course they are consumers now as they not only make their own purchases but also influence those of their parents/guardians (see Norris, 2020). Some of these adolescents also lead in organizing events, running eco clubs, and demonstrating the power of youth activism and voice. The climate crisis has propelled many students to walk out of schools on designated Fridays to protest adults' inaction, following Greta Thunberg. Dianne Saxe, environmental lawyer and former Environment Commissioner for Ontario, has pointed out that corporate and government leaders can no longer plausibly claim "deniability": we all know the deleterious effects of our overconsumption of resources and output of waste, including greenhouse gas (GHG) emissions (see Acton & Saxe, 2020). Given these circumstances, leaving ESE out of the K-12 curriculum, and by extension out of ITE, is tantamount to negligence.

In 2018, the United Nations' Intergovernmental Panel on Climate Change (IPCC) warned that we had only 12 years to act in order to keep global warming under 1.5 degrees Celsius above pre-industrial times.[1] In order to achieve this goal, drastic socio-economic changes are needed, and surely education has a role to play in this transformation (see Stickney & Skilbeck, 2020, p. 791).

[1] See the UN IPCC (2018) report: https://www.ipcc.ch/sr15/

We need to lower by 2030 our GHG emissions to 55% of 2010 levels, and reach net 0% by 2050.[2] The IPCC recently released (August 2021) their joint report on the Physical Science behind global warming, indicating that currently we are failing to meet needed reductions, cautioning that exceeding this tipping point will bring severe consequences (see the next IPCC report in February 2022).[3] Such dire warnings make it unconscionable that educators would wait further, "sleepwalking into catastrophe" (Bonnett, 2013) at precisely the time we need to be "*ecologising education*" (Bonnett, 2020).

Bringing Environmental Sustainability Education Into a Master of Teaching Program

Including a mandatory ESE course in our ITE program started in April 2018, when Arlo Kempf, then Associate Director for the Master of Teaching (MT) Program (Intermediate/Senior) at OISE, within the Curriculum, Teaching, and Learning (CTL) Department, asked me to redesign a general *Issues in Secondary Education* course to specifically address ESE. Capturing the backstory, I asked current Associate Director, David Montemurro, to share recollections.

Around 10 years ago at a Faculty Forum event at OISE, where all of the Teacher Education Faculties from Ontario gathered, David Montemurro and Hilary Inwood attended a session led by Charles Hopkins, the Sustainability Chair for UNESCO who also taught at York University. Finding common interest sparked discussions between these two OISE faculty members that led eventually to lasting partnerships with Toronto District School Board (TDSB) and ongoing work with "ESE at OISE," of which Inwood is Lead faculty member. Inwood is a dynamic change-agent in the Ontario and Canadian movement to embed ESE in ITE; in 2021 she was co-chair, with Lindsay Bunce and Haley Higdon, of the highly successful EECOM conference: Exploring the Nature of Cities, Urban Environmental Education in Action.[4] Inwood was awarded the society's 2021 Award of *Excellence for Outstanding Post-Secondary Educator.* Montemurro has long worked on issues around eco-justice and global citizenship education, and has brought into the program opportunities for TCs to work internationally in their practicum placements on affecting social change (see Montemurro et al., 2014). This chance encounter brought two change-agents into association, but intentions/aims had to be brought into relation with the material conditions: our existing ITE curriculum, governing policies and practices, and staffing and enrolment contingencies in the MT program at OISE.

Back in 2015, our TCs were required to take broad *Issues 1 & 2* (36-hour) courses, in year 1 and 2 of the program, covering a wide array of topics. Gradually making these courses more

[2] See https://saxefacts.com/or, dsaxe@saxefacts.com and on Twitter, @envirolaw1

[3] AR6 Climate Change 2022: Impacts, Adaptation and Vulnerability. https://www.ipcc.ch/report/sixth-assessment-report-working-group-ii/

[4] Sponsored by The Canadian Network for Environmental Education and Communication. Online, April 21-24, 2021. See https://ecoschools.ca/eecom/

specific revolved partly around Ontario College of Teachers (OCT) accreditation requirements, as the MT Program was mandated to offer more training around legal issues but also address sustainability, Indigenous perspectives, and anti-discrimination. Initially making these topics thematic units within the *Issues 1 & 2* courses (accounting for 18 hours or 25% of the 2-year, 72-hour course) was hard to maintain in terms of coherence and continuity with mostly sessional contract instructors coming and going from year to year. These topics also require specific subject-expertise rather than general background in school issues. With growing interest in decolonizing education, advocacy within the MT Program grew toward making a stand-alone 36-hour course, *Indigenous Perspectives and Settler Colonialism* (in I/S only, not in the primary or intermediate divisions where it is still blended with Social Studies). Law was combined with Ethics in the *Issues 1* course (18-hours each, for 36-hours) and *Issues 2* was initially left as an open issues-in-secondary school education course (36-hours) that included some ESE. I taught that *Issues 2* course too (2017), and saw merit in sharing with TCs what was happening in schools around de-streaming Grade 9, revising the sex education curriculum, working in our affiliate teacher federations/unions through labour disputes, forming gay-straight alliances, closing achievement gaps, and introducing some ESE. Through dialogue between Kempf, Inwood, and Montemurro, gaining assent from our CTL Chair Clare Brett and Academic Council, *Issues 2* was finally transformed into a stand-alone course in 2018, as *Sustainability Education: Issues and Practices*, helping us to fulfill our Vision statement.[5] Although there is only brief mention by the OCT of including ESE as something TCs should learn to bring into their teaching while undergoing their teacher reduction,[6] the Association of Canadian Deans of Education is now (2022) calling for inclusion of ESE as one of the three priorities in ITE, making it all the more timely that teacher education programs get on board with this urgent movement.[7]

So far, at least five Ontario universities (including ours) have made ESE a mandatory component of their ITE programs (Inwood, 2020). It helps to have these trailblazers when lobbying university administration to expand ITE programs to include ESE, as this can be controversial for several reasons. There are opportunity costs, as now I am not covering the kinds of relevant

[5] See https://www.oise.utoronto.ca/mtvisioning/UserFiles/File/MT_Program_-_Vision_and_Program_Expectations_2019_Dec.pdf

[6] See the *Accreditation Resource Guide*, Ontario College of Teachers, Version 2.0 Released September 2017. See p. 9, bullet 3.
https://www.oct.ca//media/PDF/Accreditation%20Resource%20Guide/Accreditation_Resource_Guide_EN_WEB.pdf

[7] Accord on Education for a Sustainable Future. © Association of Canadian Deans of Education (2022). See pp. 4 and 11 (bullets b & c): https://csse-scee.ca/acde/wp-content/uploads/sites/7/2022/03/Accord-on-Education-for-a-Sustainable-Future.pdf

issues I did earlier (in 2017). Adding more mandatory courses also limits the number of electives students can take, raising issues around free choice that involve principles of liberalism (see Ferkany & Whyte, 2013). Some would push back against neoliberal demands for individual choice, arguing that systemic change is needed, and quickly, to have any meaningful impact on climate change (see Cachelin et al., 2015; Kopnina & Cherniak, 2016; Tulloch & Neilson, 2014). Another concern is whether there is enough content and skills for an ESE-focused course to grow to 36-hours. Is ESE better infused in all teachable subjects, if instructors can be relied upon to include and sustain meaningful coverage in subjects such as math, moderns, physical education, and music? MT being a research-informed program for teacher education, this also means the possibility of our TCs doing their research papers in this field as well as providing evidence-informed and otherwise authoritative perspectives on various ESE pedagogies. In support of this initiative, a growing body of literature is emerging on the importance of, and best practices in, ESE in ITE, both in edited volumes and scholarly journals (see Karrow & DiGiuseppe, 2019; cf. Reid, 2020) making it more incumbent upon institutions of higher education and policymakers to respond (see Van Poeck et al., 2018; Van Poeck et al., 2019). For the last 4 years, I have had my TCs critique peer-reviewed journal articles in the field of ESE, giving them exposure to this vast literature and honing research and critical thinking skills for our graduate-level program.

One could reasonably ask why it took so long to get a required ESE course for teacher candidates, 9 years after the Ontario Ministry of Education (MOE) published *Acting Today, Shaping Tomorrow*: ostensibly infusing ESE within every subject of the K-12 curriculum. The call to action then was quite clear:

> Schools have a vital role to play in preparing our young people to take their place as informed, engaged, and empowered citizens who will be pivotal in shaping the future of our communities, our province, our country, and our global environment. (MOE, 2009, p. 1)

Many schools did get on board, forming eco clubs and becoming platinum ranked eco schools by aligning their curriculum and school practices with the Three R's. But 2008-2010 was also the time when Character Education (or Character Development) was reintroduced into the Ontario education system as a required program across all subjects from K-12. Districts across Ontario responded actively to this policy, developing and promoting locally developed lists of character attributes and handing out character awards for perseverance and courage (etc.) at assemblies. In 2012, School Effectiveness Frameworks landed in Ontario, bringing a global education reform movement (or GERM, as Pasi Sahlberg calls it[8]; see Stickney, 2015) to the

[8] See GERM that kills schools: Pasi Sahlberg at TEDxEast (2012) https://www.youtube.com/watch?v=TdgS--9Zg_0

forefront of school agendas at staff meetings and on professional development (PD) days. Overlapping initiatives such as these, as worthy as they may be, have the tendency to overburden limited resources within District Boards of Education and individual schools, including time and funding for PD. Fortunately, in 2017 the MOE refreshed its ESE mandate, making implementation of *Acting Today, Shaping Tomorrow*[9] easier by publishing all of the ESE-related curriculum expectations for every subject and course, K-12 (MOE, 2017).[10] Still adhering to this 2009 policy of infusing ESE across the curriculum, as well as still doing moral education in all subjects, I have our TCs develop and share mini-lessons in their teachable subjects (using these expectations), adding to their teaching repertoire exemplary cases of engaging pedagogy that share knowledge, skills, and attitudes that promote environmental consciousness, eco justice, and personal and collective responsibility. I also had them do final presentations where they either talk to fellow teachers about meaningful ways to engage adolescent leaners in the ESE-related aspects of their field, demonstrate or discuss arts or place-based education as ESE pedagogies, or connect ESE to their existing Master's research paper topics. Most teachers, however, are not familiar with this 2017 curriculum document or of the 2009 mandate to include ESE in all subjects, and it is not the priority of the current Minisitry of Education under the Conservative Government in Ontario.

In April of 2021 Montemurro met with Inwood and I to discuss pathways on which our CTL/MT students could possibly be engaged in University of Toronto initiatives aimed at addressing the climate crisis by actually working toward sustainability. With regard to *Sustainability Issues* (CTL7070H), David noted that "The idea of drawing on UofT as a "living lab" and promoting students to become "Agents of Change" are two facets that seem close to the intents of the course."[11] After our initial meeting with TDSB representatives, as of May our TCs now have the option of submitting some course work to the TDSB for publication on their Outdoor Education and Eco Schools websites. What TDSB is interested in is TCs developing mini-units or lessons that revolve around outdoor education (with pre- & post-excursion lessons in the classroom), webinars on ESE in subjects (not just science) that also involve issues around inclusivity, eco justice or Indigenous perspectives (filling an identified gap for TDSB teachers), or doing place-based education in locales within Toronto that connect to the ESE curriculum for various subjects. Having completed out first pilot, we will debrief this fall to look at ways of fine tuning

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[9] *Acting Today, Shaping Tomorrow: A Policy Framework for Environmental Education in Ontario Schools* (MOE, 2009)
http://www.edu.gov.on.ca/eng/teachers/enviroed/shapetomorrow.pdf

[10] Environmental Education Scope and Sequence of Expectations, 2017 Edition (MOE):
http://www.edu.gov.on.ca/eng/curriculum/elementary/environment.html
http://www.edu.gov.on.ca/eng/curriculum/secondary/environment.html

[11] See https://sustainability.utoronto.ca/home/CECCS/ and https://sustainability.utoronto.ca/home/ceccs/campus-as-a-living-lab/campus-as-a-living-lab-principles/

this opportunity for TCs to make their ESE course work more meaningful and get some of it published. All of this adds to our work load, of course, and we cannot expect that either the majority of TCs in these spring/summer sessions want this level of engagement or that all instructors will welcome the additional supervision and networking required. It does feel good, though, as educators, to see our students contributing productively as well as reflecting deeply.

So, how did I come to be responsible for designing and teaching the course as well as developing material and human resources (now its chronicler)? The timing was opportune, as I had arrived in the MT program a year earlier after retiring from 30 years of teaching Geography, Astronomy, Philosophy, Theory of Knowledge, and English. Unknown to Kempf, I also brought to this role a background in environmental activism, food and housing cooperative management, and a long history of philosophical interest and scholarship in place-based environmental education as well as epistemological problems in cases like climate science denial (see Stickney, 2020a, 2020b, in press; Stickney & Bonnett, 2020; see also my work in Heath et al., 2020).[12] Although this personal academic history shows strengths in some ESE-related areas, specialization also reveals weaknesses. Having taught graduate courses in Philosophy of Education at OISE (2006-2009) and the Philosophy ABQ and MEd course at OISE (2010-2014), for me it has been a challenge to pull back from my previous graduate seminar style of conducting intense discussions of philosophical literature to also focus on issues around educational policy (e.g., unpacking curriculum and assessment documents from the MOE), and exploring differentiated pedagogies and veridical discourses around adolescent learning (e.g., the benefits of problem-based learning and independent research & inquiry). Here I have to lean on my experience as a curriculum leader and classroom practitioner for 30 years: having been a Deaprtment Head of Geography for 19 years, textbook author and advisor, and Associate Teacher hosting TCs in my classroom for 25 years. Although our course evaluations are generally very positive (over 4-out-of-5 across the rankings, exceeding CTL averages), I do note that some of the students who give lower scores strongly object (in their comments) to the academic jargon in many of the assigned papers (see below), and react negatively to philosophical and theoretical discussions around ESE. In fairness, our TCs come from all undergraduate fields, and many who majored in maths and sciences may have lower tolerance for research that draws on Heidegger, Foucault, and feminist ethics to address topics

[12] For my JOPE video abstracts, see https://onlinelibrary.wiley.com/page/journal/14679752/homepage/videoabstracts.
My paper "Pedagogies of Place: Conserving Forms of Place-Based Environmental Education During a Pandemic" was accepted for presentation at the International Network of Philosophers of Education bi-annual meeting, Copenhagen, Denmark (August, 2022).

like posthumanist animal welfare. I could not teach the course and leave this discourse out, but I concede that some TCs might better learn ESE from a science teacher, making environmental investigations and project-based learning the focus instead, or from a practitioner in their own field (e.g., music, English, or art) who designed classes primarily with an eye toward practicum preparation.

Completing our fourth year, I find myself now enjoying the process of helping others to come into teaching this course, including Erin Sperling, who has a strong Science teaching background and PhD in ESE at OISE. Erin was a valued guest speaker in the course from its inception, addressing issues around food and eco justice. Realizing that I might actually retire someday, it is prudent that we develop capacity and also bring in fresh eyes and talent. Each instructor has their own background expertise and interests to share. The MT program also is evolving, and we are being challenged across CTL to consider implicit bias and exclusion of some voices in our course syllabi, ensuring that we address anti-Black racism and confront the legacy of colonialism that has had devastating impacts on Indigenous peoples. We are diversifying our course readings, as well as our guest speakers, and bringing in more consideration of eco-racism, eco- justice issues, and Land-based pedagogies among Indigenous peoples. These differently demanding but enriching assignments "landed on my desk" at just the right time, oddly, helping me to work on environmental issues in "retirement." How can I face my three grandsons, and give them realistic hope for their future? In part, by investing energy in this ESE-in-ITE project.

How Is the Course Structured?

Reasonable arguments can be made for a variety of approaches to teaching ESE in ITE. Instead of a narrow focus, deepening learning within one area of the field, we went with a broad survey of topics, encouraging critical and appreciative/creative over instrumental approaches to eco-pedagogies. Running in compressed 6-week sessions in May-June and July-August, the risk in this approach is that it becomes something like the quick trip through Europe where tourists see a different city/country every day. On the same analogy, these quick spring/summer visits can be exhilarating, offering novelty each day and avoiding tedium that specialization might occasion. The survey model seems to work well with the diverse TCs in our four-to-five cohorts (consisting of approximately 30 students each), which are mixed in terms of the two teachable subjects each TC is preparing to teach on practicum and in their career. We cannot possibly go deeply into each subject area, which is why we leave it to TCs to implement in their mini-lessons and final presentations. One of the early activities we engage TCs in is to get into subject-related groups to discuss which of Sauvé's (2005) "currents" in ESE best fits with teaching Sciences, History, English, et cetera. This typology of ESE needs updating but it still

offers a good starting point for discussing the suitability of different ESE pedagogies for the subjects taught in the Ontario curriculum.

Forfeiting thematic unity and continuity or sequential build-up, we take a more issues-based approach that hopefully appeals to the interests and needs of our TCs. Here is a quick synopsis of the 6 weeks, intended to give the reader a better idea of the content covered and issues discussed. It should be noted that ours is a Master of Teaching Program, with a strong emphasis on being research and theory-informed as well as honing practice.

Week 1

Introducing a course takes precious time, so I now video record (on Zoom) my opening explanation of the assignments. This frees us up to discuss reasons for including ESE in ITE, asking them to read Evans (2020) or Inwood (2020) in advance, and providing supplementary literature on this initiative (Dyment & Hill, 2015; Tomas et al., 2017). We also bring in Hilary Inwood as a motivational speaker, perking interest and also showing ways of getting involved in ESE at OISE—like our garden and seed library, or stairwell mural projects.

Systems theory is presented as a threshold concept in ESE (Sandri, 2013), illustrated with a short video clip from NOVA's "Earth from Space"[13] and with PowerPoint presentation on the Carbon Cycle that serves as demonstration of their first assignment: embedding ESE in one of their teachable subjects with a mini-lesson that conveys ESE content and skills in an engaging way. The class has read Maria Ojala's (2016) insightful paper on addressing students' climate anxiety, and assigned a section of the paper to discuss with the class in a jigsaw format. The discussion unearths key terms such as transformative versu transgressive ESE; positive and negative emotions, and emotional regulation; existential threats and realistic versus false hope; and Foucauldian themes of forming one's self by speaking truth (*parrhesia*) within changing power/knowledge dynamics, without the assurance of objectivity and yet some pragmatic sense of what works for our times in moving us out of danger. Matters of fact, value, and concern (Bruno Latour) are connected to David Saddington's[14] TED Teen Talk and a Belgian case study that looks at three approaches to engaging teens, from outdoor education to documentary films (Van Poeck et al., 2016). For the practical minded TC, supplemental readings are provided on students' questions about climate change (Tolppanen & Aksela, 2018), climate changes in ITE (Berger et al., 2015), and balancing students' emotions around hope and gloom (Kelsey, 2016).

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[13] Earth From Space Full HD Nova
https://www.youtube.com/watch?v=aU0GhTmZhrs

[14] Why I don't care about 'Climate Change' | David Saddington | TEDxTeen
https://www.youtube.com/watch?v=7vnzKPq390Q&t=1s

Week 2

In this ESE course, TCs are encouraged to consider how young people can form a sense of their own position on complex, "wicked," or controversial issues and develop a capacity for self-expression and advocacy by practising pluralistic democracy in the classroom (see Sund & Öhman, 2014). Instead of polarizing the classroom along political or religious lines of thinking, or politicizing the classroom by privileging the teacher's views, we entertain ways of conducting debates in person and online, and developing persuasive writing and speaking skills. TCs read Erik Andersson and Johan Öhman (2017) on constructive uses of social media for creating a "third space" for anonymous expression about and co-construction of meaning on the climate crisis, as well as analysis of epistemological moves frequently made in argumentation. We model this practice by using platforms such as Socrative, Padlet, Nearpod, and jamboard to create safe spaces for expression of divergent views, and also turn to resources on argumentative writing such as *They Say/I Say* (Graff & Birkenstein, 2014). We also introduce social justice and racial and socio-economic issues in relation to how people dwell within urban communities, using Julian Agyeman's keynote talk from the 2021 EECOM conference (see Agyeman, 2005; Agyeman & McLaren, 2017).

Beyond engaging diverse students in public forums for debate in our classrooms, on a societal level we need to look toward effecting needed change through broad coalitions that can work together across political, cultural, or religious divisions. We cannot afford to wait to settle all opposing positions in ESE: such as humanisn versus posthumanism, or whether humans have a (perhaps divinely mandated) role as stewards of the earth in managing wisely our natural resources, or whether non-human animals and nature itself are coequal in deserving regard (beyond instrumental use) and even rights (see Stables, 2020). We can seek agonistic pluralism instead of consensus without giving up epistemic criteria around what we know to be factual (even if only provisionally for now; see Hand, 2008) and avoid falling into epistemic relativism where nothing is decided or true. The aims in bringing these topics up in class must not be toward normative, moralizing conversion or indoctrination of one group by another, or of the students by the teacher. We should be able to agree that global warming is a fact, but students may have a wide range of reasonable views as to what is the best course of action in meeting our energy needs while reducing our carbon footprint. A topic I share for discussion with TCs is the wicked problem as to whether nuclear energy is the best way to reduce GHG emissions, scaffolding this by showing a debate between two environmentalists who articulate opposing sides.[15]

[15] See Stewart Brand and Mark Z. Jacobson's debate at: https://www.ted.com/talks/stewart_brand_mark_z_jacobson_debate_does_the_world_need_nuclear_energy?language=en

It helps to look at the array of teachers' conceptions on issues such as anthropocentrism/non-anthropocentrism, as well as ability to empathize with animals (termed "anthropomorphism"), drawing on survey data in Quinn et al. (2016). Gender jumps out as factor for consideration, as those identifying as female on the binary choice provided in the survey show a 4:1 ratio in favour of non-anthropocentrism among females and an 8:1 ratio in favour of being more sympathetic (anthropomorphism). Not assuming that this pattern is innate, we consider socialization into different gender performance scripts. This pattern also appears in a large-scale survey of students in Sweden, where girls identify more strongly as having retained their eco-consciousness through late adolescence whereas boys tend to decline, and more so in Eco schools that rely too heavily on normative means of persuasion or mere conveyance of facts instead of transformative problem-solving (Olsson & Gericke, 2016, 2017). Our ESE/ITE aim here is the better understand our students and teachers (see Eames et al., 2018).

Week 3

Acknowledging the difficulty some TCs encounter in reading articles that convey deeper philosophical perspectives, we provide choices in the hope that one paper will resonate, and in small groups/breakout rooms have them discuss ESE issues around topics such as humanisn versus posthumanism (Barrett et al., 2017; Taylor, 2017), reanimating earth through Zen Buddhism (Bai, 2015), anti-scientism/reductionism (Bonnett, 2013), eco feminism and care ethics (Lloro-Bidart & Semenko, 2017), and animal rights (Kopnina & Gjerris, 2015; Lloro-Bidart, 2018).

Building on Agyeman's themes around social and eco-justice, we also bring in a guest speaker, Catherine Chambers,[16] to talk about ways in which implicit bias and eco racism play into ESE, as well as engaging students in lower income areas of Toronto through eco-sensitive entrepreneurism in making nontoxic products like candles and lotions for sale. Stephen Ritz's "Green Bronx Machine" also serves example.[17]

Place-based education is introduced (see Sobel, 2004). Although we frequently do outdoor education in this spring/summer course, here we do urban Forest School (Heath et al., 2020; Sobel, 2020). TCs are guided on an extensive (full-class) multidisciplinary inquiry into our own campus (in person or online), using trees as a focus (see Stickney 2020a, 2020b).[18] The goal here is to condense recent literature on how trees share nutrients and communicate on the wood-wide-web (Beresford-Kroeger, 2010, 2019; Tudge, 2006; Wohlleben, 2016), and make

[16] Chambers is a former MT student in the course, and now a PhD candidate in Social Justice. https://www.letsmakeit.ca/pages/about-us

[17] See Stephen Ritz, https://greenbronxmachine.org/

[18] See the video abstract from Wiley: https://onlinelibrary.wiley.com/page/journal/14679752/homepage/videoabstracts

their way into moving novels and poetry (Powers, 2018; Wright, 2019). A fun activity is to have TCs view several video clips of varying length and format on "tree talk" and then discuss which ones work best with adolescent learners, blending ESE content with pedagogy.[19] We also do arts-based learning by drawing trees, and identifying tree species with apps like LeafSnap and I-Naturalist.

Week 4

Indigenous Perspectives on ESE are introduced, linking issues around Truth and Reconciliation with Land-based education. One of our MT students made a useful video on Don Mills Collegiate, including a segment in which an Indigenous knowledge keeper discusses the creation of their Haudenosaunee garden and the rationale behind the three-sisters planting method (corn, beans, and squash).[20] Discussion ranges widely from Traditional Ecological Knowledge as a component of various Indigenous Knowledge systems, to infusing IK along with Western science in ESE (Beckford et al., 2010; Beckford & Nahdee, 2011; Kimmerrer, 2013; Kulnieks et al., 2013), environmental problems and land claims issues in Canada—for example, lack of potable water, mercury at Grassy Narrows, mining in northern Ontario's ring of fire (Korteweg & Root, 2016; Kuyek, 2019)—to avoiding both romanticizing IK and only focusing on negative stories (cultural genocide), including critical assessment of knowledge claims, and visions of renaissance or resurgence within Indigenous communities (see Asch et al., 2018). Land-based education is also contrasted with place-based education (see Blenkinsop & Fettes, 2020; Nesterova, 2020; Simpson, 2014; Styres, 2011, 2017), with discussion of how to conduct meaningful land recognitions and decolonize ESE (Addington-Greenwood, 2019).

Looking at how food, culture, and identity are interwoven in our lives (reading Stapleton, 2015), we explore eco justice issues around access to nutritious foods and address issues around vegetarianism within dominant meat-consuming societies (cf. Harris & Barter, 2015). Sharing Peter Menzel's photographs of what people around the world eat on a weekly basis,[21] we then do our own food mapping using digital tools or other media to express our own dietary practices within our culture and lifestyle. We introduce the broader topic of eco justice through Martusewicz et al., (2015), which I follow up on later in my Social Sciences class.

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[19] See Simard, S. (2016) How Trees Talk to Each Other, TED Talk:
https://www.ted.com/talks/suzanne_simard_how_trees_talk_to_each_other?language=en;
Simard, S. (2017) Nature's internet: how trees talk to each other in a healthy forest | Suzanne Simard | TEDxSeattle: https://www.youtube.com/watch?v=breDQqrkikM

[20] Yard Work at Don Mills
Created by Master's Candidate, Saya Szparlo.
https://www.youtube.com/watch?v=NNZDmFS9Oc8

[21] See Peter Menzel, https://www.menzelphoto.com/portfolio/G0000s3jj73.5TSs

Week 5

Often bringing in guest speakers from several of TDSB's Eco Schools, teaching online now we also have PowerPoints with audio added and videos recorded at EECOM 2021, so our TCs can simulate the conference experience by going to breakout rooms where they will hear a chosen speaker: Hilary Inwood from OISE and Pam Miller, TDSB; Dan Kunanec from Don Mills CI; Karen Stelling from Riverdale CI, et cetera. We also discuss an article about the first net zero school in the U.S., in Kentucky (Murley et al., 2017), and look at how our own campus is working in similar principles by developing more energy efficient and also pedagogical buildings. What are innovative ways of bringing ESE into schools, such as gardening projects? (see Jagger et al., 2016; Warner & Elser, 2015).

Arts-based learning is explored through demonstrations, guest speakers, and hands-on work. Students discuss the transformative role of empathy and imagination, drawing on Jensen (2016) and Inwood (2010). Examples of ESE through various media are shared: dance, collage, film, spoken word poetry, landscape art, et cetera.[22] TCs are exposed to works by Edward Burtynsky, Chris Jordan, and Andy Goldsworthy.[23] We often have a guest speaker in to demonstrate use of different materials and also discuss toxicity in paints, and then we do a workshop on making art from natural materials, or making ephemeral arts by arranging natural objects either manually for photographing or digitally, concluding with a gallery walk. When on campus this "current" is often situated outdoors (see Burkhart, 2016; Conkey & Green, 2018; Gray & Birrell, 2015).

Week 6

Heading into the home stretch I usually give the TCs a break from reading, but do share different perspectives on the urgency of meeting sustainability needs around the planet, while also noting how contentious "sustainability" discourses can be if we mean by that increasing levels of resource consumption for a growing population. Students have access to Population Education's *Carbon Crunch* webinar.[24] Some theorists also express concern that as we move away from EE to ESD & ESE/EfS, the focus becomes less environmental science and conservation and more development (see Gough, 2018; Gough & Gough, 2016). Our main goal here is to involve TCs in a small group problem-solving task, to model inquiry and problem-based learning approaches in ESE (Van Poeck & Östman, 2018; Van Poeck et al., 2020). We ask them to discuss ways of bringing the UN Sustainable Development Goals into their own teachable subjects, using a cross-disciplinary approach and involving various tools: chart paper, Googles docs, or jamboard.

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[22] See Solastagia, https://vimeo.com/427459325

[23] See Andy Goldsworthy - Earth Artist and his Process, https://www.youtube.com/watch?v=sngXz55b4bc
Chris Jordan: Turning powerful stats into art https://www.youtube.com/watch?v=f09lQ8Q1iKE
Anthropocene - Official U.S. Trailer https://www.youtube.com/watch?v=ikMlCxzO-94

[24] See Population Education: https://populationeducation.org/resource/carbon-crunch/

We often finish with a guest speaker, Sandra McEwen, longtime outdoor educator discussing community involvement and student engagement.[25] We also consider ways of sustaining our learning about ESE through on-going professional development, using resources such as Green Teacher, Learning for a Sustainable Future, or OAGEE.[26] We also use time in our final class to have TCs share their work in small groups/breakout rooms, giving a greater sense of what can be done to embed ESE across the curriculum. Supplementary readings for this week offer gentle nudges toward activism (Campigotto & Barrett, 2017; Macintyre & Chaves, 2017), but also seek ways of sustaining the learning and commitment around ESE (Smith & Stevenson, 2017).

Conclusion

As Montemurro notes, the origin story behind the *Sustainability Education* course is rather messy in terms of how theorists envision curriculum reform, hobbling together individual interests, initiative, talent, and late-night inspiration; shared values and commitment within the wider CTL Department; as well as growing interest from OISE and University of Toronto in responding meaningfully to the climate crisis. I mention these crucial actors, which also included then OISE Dean Glen Jones at the top of our educational institution, as ours was (in retrospect if not in foresight) a case of what Evans (2020) calls a "systems approach" to the implementation of Education for Sustainability (EfS) in ITE, and more broadly to the adoption of a Sustainability and Climate Action Plan (OISE, 2021)[27] and ESE-related programs and policies across University of Toronto. John Robinson, Professor in the School of the Environment and Munk School of Global Affairs and Public Policy, serves as Presidential Advisor on the Environment, Climate Change and Sustainability. Robinson has been influential in rethinking the design of the campus including the OISE building to become a more pedagogical and ecologically sound space, ideally achieving more than net zero (net positive energy production) and also engaging our students on various pathways to agency where their course work can be directed toward constructive ends. This integrated "system" we see today, however, grew out of something that was much less coherent, more local and organic, and improvisatory.

Educationists are sometimes temped to think that education reform is like a pre-planned technology or technique, thought through from start to finish with an eye toward the final end (*telos*). Philosopher of education David Hawkins likens this rather idealistic view to Aristotle's conception of *techne*, where the craftsperson brings form to raw material with clear ends in

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[25] McEwan co-authored *Investigating Aquatic Ecosystems* with William Andrews (Prentice-Hall, 1987). Andrews taught the elective EE course I took at the Faculty of Education, University of Toronto in 1987. https://www.amazon.ca/Investigating-aquatic-ecosystems-William-Andrews/dp/013503129X

[26] Green Teacher: http://greenteacher.com/magazine/

[27] OISE Climate Action Plan: https://www.oise.utoronto.ca/oise/News/2021/OISE_to_launch_groundbreaking_sustainability_and_climate_action_plan.html

view. In Hawkins's (1974, p. 20) account, education reform is not so much like a *techne* as it is an *eolith.* Eoliths are hide scrapers or arrow heads made from failed attempts at making spear points. They demonstrate the human trait of adaptability that has helped us survive for millennia. Conceiving curriculum development as modest *eolith* rather than *techne*, we are less likely to overlook the more iterative and improvisatory craftwork that goes into salvaging our mistakes (Stickney, 2015, p. 505), and more likely to value production of some utility and beauty: whether cutting edge pedagogy, wonderful adornments, or merely good skipping/stepping stones.

We never get it right, absolutely or permanently. Some things we did in person are just not possible now due to the pandemic. Before COVID-19, we used to walk down past the Succession Study Park beside Sidney Smith Hall to the Chelsea Rochman Microplastics Lab[28] in the Environmental Science building to learn first-hand about how plastics are permeating our air and water, and walk up to Taddle Creek Park to visit a noble copper beech tree and discuss the drainage history and Indigenous settlement of the area that now forms our campus (Stickney, 2020a). We visited the geothermal power installation at King's College Circle, and discussed how the University's Landmark Project is reforesting our campus.[29] In the year-end yearbook of one of cohorts, one-quarter of the TCs said that our walks on campus were the highlight of their 2-year program. Maybe we alleviated some of their nature deficit, right here in the heart of Toronto (see Louv, 2008). These testimonials give us encouragement to keep working on the course design to further meet student interests.

In fairness, I could be criticized for rolling out my own repertoire, sounding like Julie Andrews in professing: "These are a few of my favourite things." Reasonably,

> Evans et al. (2017) called for more critique of eco-pedagogies used in initial teacher education, and Reid (2020) notes this deficiency in his review of the ESE policy literature. Some empirically designed, survey-based studies are admittedly useful in policy-making and curriculum planning, but longitudinal studies are not a realistic option given the urgency. Expending energies on dead-end paths would surely be folly, but in most situations, educators reasonably rely on informal modes of feedback from students' reactions, anecdotal remarks and course surveys to gauge impact, working iteratively in situ instead of playing evidentiary games flowing from accountability and quality assurance rhetoric. Walshe and Tait (2019, p. 1744), for instance, demonstrate this kind of qualified confidence about their approach to transformative environmental teacher education: Findings suggest trainee teachers gained a more nuanced understanding of

[28] See: https://rochmanlab.wordpress.com/resources-for-microplastics-research/

[29] See: https://landmark.utoronto.ca/

> the value and nature of ESE, as well as more affective and informed engagement with it, across the conference. Implications for ESE within ITE focus around the potential of pedagogies which provide affective experiences, in particular participatory and arts-based pedagogical approaches, for inspiring and empowering trainee teachers to enter into schools and develop their own ESE practice as classroom teachers. …Whether or not place- and arts-based learning effect needed personal and societal transformation to save our planet, they have intrinsic value as eco-pedagogies we would comfortably recommend educators experiment with in order to promote self-flourishing—whether late in life or at the twilight of our global civilisation in the late Anthropocene. (Stickney & Skilbeck, 2020, pp. 798-799)

We do not have the luxury of time, nor the sky-view perspective (see Nagel, 1986) we might imagine to be needed to rigorously assess our ESE teaching practices, but we can model our actions on constructive role models in our community and "learn the things we need to know by doing them (Aristotle, 1962, BK II, 1103b, 31-3; p. 34). Instead of waiting until we solve all of the oppositional issues that could easily divide ESE practitioners, we do better to heed Voltaire's Candide: "*Let us look after our happiness; go into the garden and work*" (Kant, 1900, p. 122).

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