

Environmental Education as Teacher Education: Melancholic Reflections from an Emerging Community of Practice

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Abstract

During 2011 at Simon Fraser University, the Faculty of Education hosted the implementation of a pre-service teacher education program with an emphasis on sustainability and environmental learning. This cohort, termed SEEDs (Sustainability Education in an Environment of Diversity), enrolled 32 teacher education students in an intensive 12-month teacher certification program composed of equal parts campus and field-based seminar experiences and practicum placements in a variety of K-12 school classrooms. While reflections on the overall experience from students and community stakeholders were positive, the potential of the model (with students, Faculty Associates, and School Associates fully supporting each other) was not fully realized. Stakeholders involved in the development and implementation of the SEEDs module were left feeling melancholy as we discovered “dark matter” in our difficulties with implementing a true community of practice for environmental learning hosted within the structure of a large and diverse teacher certification program. This paper focuses on the reflections of SEEDs students, instructors, and courses facilitators working in the program, but more importantly recounts the constraints faced by the community as it attempted to reconceptualize the dominant (hegemonic) approach of teacher development common in Canadian teacher certification programs.

Résumé

En 2011, la Faculté d'éducation de l'Université Simon Fraser à Vancouver a mis en œuvre un programme de formation initiale à l'enseignement avec une emphase sur l'écodurable et l'apprentissage à l'environnement. Cette cohorte, nommée ÉÉED (Éducation Écodurable dans un Environnement de la Diversité, en anglais SEEDs), était formée de 32 futurs enseignants et enseignantes dans un programme intensif de 12 mois et consistait dans une part égale de séminaires sur le campus, de séminaires de terrain et de stages dans diverses classes du niveau primaire et secondaire. Les responsables impliqués dans le développement et la mise en place du module ÉÉED ont rencontré la « matière noire » face aux difficultés de créer une communauté de praticiens spécialisés dans l'apprentissage à l'environnement au sein de la structure établie d'un programme de formation en enseignement. Cet article met l'accent sur les réflexions des étudiantes et étudiants, des chargés de cours et des instructeurs du programme ; il fait état des contraintes vécues par la communauté et il tente de reconceptualiser le modèle hégémonique de la formation des enseignants.

Keywords: environmental education; teacher education; cohorts; practicum experiences

Prologue

In the title of this work we use the term *melancholic* to describe the type of reflection undertaken throughout our collaborative research efforts. *Melancholy* in the archaic (or etymological) sense of the word is described as an emotional state characterized by sullenness or outbreaks of anger, and was believed to arise in certain individuals from a mysterious “dark matter” originating deep within the body. In contemporary usage, the term refers to (a) a sadness or depression of the spirits, or (b) pensive reflection and contemplation. While elements of both of these states might describe our collective experiences in this collaborative program of research, the latter term (pensive reflection) is more descriptive of the type of reaction we wish to portray in this paper.

Introduction

In January 2011, a teacher education cohort focusing on environmental education was implemented as a pilot program in the Professional Development Programs at Simon Fraser University. The module, designated Sustainability Education in an Environment of Diversity (or SEEDs) by the students themselves, was similar in general purpose and structure to the other cohorts in the Faculty of Education, in that it was designed to educate students to meet the general requirements for teacher certification. However, what made the SEEDs program unique was that it would provide a range of place-based and outdoor field experiences while requiring teacher candidates to register for an intensive project-based course held in a remote field location (Haida Gwaii). The general goal of the module was to develop teachers with the motivation and capabilities to act as key change agents in transforming education and society towards a more sustainable future. In its intended design, the proponents of the model hoped that students enrolled in the cohort would become part of a community of practice with diverse players including pre-service teachers, School Associates, Faculty Associates, and other community stakeholders supporting each other in developing environmental pedagogies (K-12).

Environmental education can take many forms and currents (see Sauv e, 2005). Needless of the perspective taken, many of these forms were characterized by the program through the inclusion of diverse lenses on pedagogy, including those of experiential education, critical pedagogy, constructivism, and place-based education. SEEDs instructors also attempted to model these as a curriculum framework for their students. Learning experiences were focused on

direct experience, critical reflection, and negotiation. To support this environmental education framework, the SEEDs module spent a great deal of time in the program promoting the British Columbia Ministry of Education's (2007) *Environmental Learning and Experience: An Interdisciplinary Guide for Teachers* as a model to follow in their own practice. The guide focuses on providing a single interdisciplinary approach to environmental education for all K-12 teachers across the province of British Columbia. The accompanying *Environmental Learning and Experience: Curriculum Maps* (British Columbia Ministry of Education, 2008) map out the sustainability and environmental concepts in the K-12 prescribed learning objectives, and in turn facilitate teachers' discoveries of new ways of integrating environmental education into their classroom practices.

While student reflections on the overall teacher education experience could be described as positive, the potential of the model (with students, Faculty Associates, and School Associates fully supporting each other in their environmental pedagogies) was not fully realized in our work. Stakeholders involved in the development and implementation of the SEEDs module were left feeling melancholy as we discovered "dark matter" in our collective difficulty in implementing a true community of practice for environmental learning hosted within the structure of a large and diverse teacher certification program. This paper focuses on the reflections of SEEDs students, instructors, and course facilitators working in the program, but more importantly recounts the constraints faced by the community as it attempted to reconceptualize teacher education.

Rationale for SEEDs

As early as the 1990s, the United Nations (UN) Educational, Scientific and Cultural Organization (UNESCO) identified teacher education programs and teacher educators as major players in the reorientation of education to address sustainability (UNESCO, 2005). In 1998, the UN Commission on Sustainable Development appealed to UNESCO "to develop guidelines for reorienting teacher training to address sustainability" (UNESCO, 2005, p. 11). The reason for such an emphasis on teacher education programs, as described by UNESCO (2005), is that: "Institutions of teacher education fulfill vital roles in the global education community; they have the potential to bring changes within educational systems that will shape the knowledge and skills of future generations" (p. 11).

Educators and researchers alike have argued that for K-12 schools to produce environmentally literate people, teachers must first have the ability to "green" the curriculum (McClaren, 1989; Lin, 2002). Jickling (1997), in commenting on the relations between environmental education and teacher education, argued that, "if we are to grasp the present opportunities to shape environmental education and its place in educational systems, we must change our approach [and this] will involve...changes to teacher education" (p. 100). Unfortunately, research studies from around the world continue to inform us that environmental education and

sustainability programming are encountering significant obstacles in being integrated into teacher education (see Beckford, 2008; Lin, 2002; Tilbury, 1992). Teacher education in Canada is a clear example, with research by Lin (2002) and Beckford (2008) painting a sad picture of the scarcity of environmental education as a significant component in teacher education programs. Their work suggests that not only are there just a few Canadian universities offering environmental education programming in teacher education, but also that there has been no dramatic increase in environmental education programming in teacher education over the past 30 years.

Teacher Education Research

Although research in teaching has been documented for over a century, teacher education research is still in its infancy (Grossman & McDonald, 2008). In the 1970s teacher education research became a legitimate field of study in education at the graduate level, conducted by a small group of interested individuals until the mid-1980s (Zeichner & Conklin, 2005). In 1984, the American Educational Research Association founded Division K: Teacher and Teacher Education, providing this research field a forum for its community of practice. As a result of this path to accreditation, teacher education research “has developed in curious isolation” from related research fields in education, such as teaching and higher education, leaving it “somewhat of an orphan, connected to neither of its natural parents” (Grossman & McDonald, 2008, p. 185).

Teacher education research, in its early stages, was characterized by questionnaires surveying practices by teachers, and studies aiming to identify what elements characterize a good teacher (or effective teaching). In the 1960s and early 1970s the field began to see the use of more qualitative approaches that incorporated “naturalistic and interpretative methodologies” (Zeichner & Conklin, 2005, p. 80), referring to research approaches such as ethnography, case study, narrative inquiry, biography, and life history, in addition to adopting critical, feminist, and poststructural perspectives.

These interpretative approaches in teacher education research later gave way in the 1990s to research being done by teacher educators themselves on their programs and practices. Some educators claim that they and their programs have benefited from their self-study research, and researchers gain a unique inside perspective on the “classroom” environment (Zeichner & Conklin, 2005). The authors of this study concur with the latter assertion, in that the self-study approach allowed for a greater depth of analysis of our unique situation, and provided more information on our unique context than that would be possible in more empirical forms of research.

The first reports done on environmental education and teacher education research in Canada were conducted by Rioux (1973) and Davis (1976). The research of Rioux (1973) noted that environmental education in Canada at the

time was analogous with outdoor education and therefore focused on the natural environment. Rioux found little evidence of environmental education in teacher education programs in Canada, with only 9 of 41 higher education institutions reporting some programming of this type. A report published by Davis (1976) surveyed all of Canada to describe environmental education legislation in each province and territory. Davis found that some sort of environmental education existed in each province, with or without legislation. This study was followed by Towler (1980/81). Towler studied 41 Canadian tertiary education institutions hosting teacher education programs and reported that during the 1977/78 academic year, only 18 offered an environmental education methods course.

Towler's research was replicated nearly 20 years later in a doctoral study by Lin (2002), which "[attempted] to ascertain the changes that had occurred in pre-service teacher education programs [within the context of environmental education] since Towler's (1980/81) study" (p. 201). Lin's (2002) results showed no significant change, leading her to state that "the preparation of pre-service teachers remains at an inadequate and underdeveloped level in Canada" (p. 211). Of 35 teacher education programs surveyed, only 12 offered courses on environmental education but 10 of them reported offering a course package that could lead to a major/minor in it; six others stated that it was a component of other methods courses. When comparing the work of Towler (1980/81) and Lin (2002), we see that the number of Canadian tertiary education institutions that offered environmental education courses in their teacher education programs had dropped from 43% to 35% from 1978 to 1996.

Beckford (2008) published an analysis of environmental education in teacher education programs in Ontario. What he found was reminiscent of the earlier research, discovering that little change has been seen over the course of 30 years since the signing of the Tbilisi Declaration. While noting that teacher education research on environmental education is rare in Canada, Beckford also referenced a study of teacher education programs in Ontario by Pandya (2006) that reported that pre-service teachers were provided very little opportunity "to learn whole school approaches to EE that would take them outside the traditional school curriculum" (cited in Beckford, 2008, p. 56).

In a more recent attempt to report on the "greening" of curriculum within Canada, the Council of Ministers of Education, Canada (CMEC) released a report of a nation-wide study of Canadian faculties of education "to better understand how they are incorporating Education for Sustainable Development (ESD) into their pre-service programs, research and other activities" (CMEC, 2012, p. 7). Of the 62 faculties of education that were contacted to participate in this study, only 37 responded. Of those 37, 6 universities (16%) reported that they currently offer a course about education for sustainable development. They also claimed that while courses focused on education for sustainable development were not common, sustainability principles existed already in their program, bundled with science and social studies design courses, and that sustainability was an

underlying principle of the teacher education program. Still, documenting the efficacy of such approaches (or even the validity of the claims) is an ongoing problem for teacher education research.

Supportive Learning Environments and Environmental Education

Learning environment studies acknowledge and account for both the physical and social realms where learning occurs (Temple, 2007), and this focus was an important factor in the implementation of our teacher education program. Studies on the socio-environmental and psychosocial conditions that influence the process and experience of learning are termed “learning environment research” (Astin, 1993; Dorman, 2002; Dorman, Fisher & Waldrup, 2006; Fraser, 2012; Strange & Banning, 2001). Trends in learning environment research indicate that a positive learning environment as perceived by students can be an important consideration in program evaluation, and can also be a strong predictor of learning (see Dorman, 2002; Fraser, 2012).

Reviews of the literature in this area highlight the widespread use of both qualitative and quantitative research methods in studying learning environments (Fraser, 2012). The use of questionnaires in learning environment research (triangulated with qualitative methods) has established an economical approach to assessing the learning environment of students. Over the last 40 years learning environment research has grown considerably, now boasting an array of widely applicable questionnaires that have been developed, tested, and validated in a variety of settings and countries (Dorman, Fisher, & Waldrup, 2006; Fisher & Khine, 2006; Fraser, 2012; Tal & Morag, 2007; Wubbels & Brekelmans, 2012; Zandvliet, 2012).

The SEEDs module was heavily influenced by learning environment theory. For example, specific pedagogies were implemented to develop strong social connections among the cohort members, and deliberate attempts were made to foster more sustained community and environmental interactions in the students’ experiences. Further, socio-constructivist ideas such as “critical mindedness” and “shared control” in the curriculum were modeled and described. At various times in the program, these perceptions were measured or described through the use of a specifically designed questionnaire termed PLACES (Place-based and Constructivist Environment Survey) (Zandvliet, 2012), and through interviews and focus groups. While this work is not a major focus presented in this paper, this perspective provides a piece of the context which informed the narrative presented here. The following section describes the actual program design and flow as it was implemented concurrently with our study.

Program Design

The SEEDs module had its roots in a previously existing module of the Simon Fraser University Professional Development Programs termed “Global Communities.” The Global Communities module was established in 2004 by (co-author) David Zandvliet, a faculty member with a background in field biology and science education at Simon Fraser University. This member later initiated the development of SEEDs. In the Faculty of Education at Simon Fraser University, core tenure track faculty are given opportunities to act as Faculty Sponsors, giving a special emphasis within specific teacher education student modules. An incentive for taking on this role is that they may extend their research interests through their work with a module. Faculty Sponsors may involve themselves with module programming in a variety of ways, including working with module instructors, who are known as Faculty Associates. As described by Alsop, Dippo, and Zandvliet (2007), the Global Communities module attempted to infuse the faculty member’s interest in ecological thinking into its programming:

In Global Communities, pre-service teachers and their school-based mentors are encouraged to consider the broader context of the social and environmental community as the true role and purpose of teaching. In modeling this approach, module facilitators [i.e., Faculty Associates] ensure that members share significant place-based experiences as part of the instructional process and seminar experiences, which in turn help set the tone for their work in the schools. (Alsop et al., 2007, p. 212)

In the staffing structure at Simon Fraser University, a Faculty Associate is normally a practicing British Columbia teacher who is recruited from the K-12 school system and appointed at the university on secondment from a school district for a one- to two-year term. Their major role is to work in the instruction and classroom supervision of pre-service student teachers, and to act as mentors in developing practice.

The SEEDs’ module content did attempt to implement a range of environmental education forms in its programming (see Sauv , 2005), but prioritized its mission as developing the ability of teacher candidates to navigate the requirements of regular practice in the K-12 school system. With that in mind, the SEEDs module conceptualized 10 broad educational goals. Specifically, it intended teacher-candidates to:

- develop a strong sense of community (within their cohort);
- accept the inherent risks in their new learning;
- examine (their individual) beliefs about teaching and learning;
- assume responsibility for their own professional development;
- become a caring and reflective teacher;
- develop informed beliefs and educational theory;
- learn to accommodate and celebrate students’ differences;
- develop effective classroom practices that nurture children;

- practice ethical, collaborative relationships with colleagues that are characterized by open and authentic communication; and
- bring ecological and cultural awareness to their (developing) practice.

To meet these goals, as well as those of the teacher certification program, the SEEDs module adopted an infused (see Hutchinson, 1998) approach for environmental education, as described by the *Environmental Learning and Experience: An Interdisciplinary Guide for Teachers* document and the *Environmental Learning and Experience: Curriculum Maps* document (British Columbia Ministry of Education, 2007; 2008). The guide focuses on providing a single interdisciplinary approach to environmental education for all K-12 educators across the province of British Columbia. It conceptualizes experiential learning as “a guided process of questioning, investigating, reflecting, and conceptualizing based on direct experience” (Itin, 1999, p. 92).

The *Environmental Learning and Experience: Curriculum Maps* (British Columbia Ministry of Environment, 2008) document was developed to help teachers turn theory into practice for environmental learning by connecting learning outcomes across K-12 curricula. The curriculum maps are intended to make explicit the primary learning outcomes from the sciences to the arts that exist in the British Columbia K-12 curricula, with strong links to sustainability and environmental concepts. The SEEDs cohort was introduced to these documents during the first week of their program as a model to follow during their teacher training, and as a unifying lens with which to approach teaching and learning. With the guide and maps, the teacher candidates were given a strong foundation to base their teaching around K-12 environmental and sustainability topics.

Program Flow

The SEEDs module was a January intake module (see Figure 1) with 32 students in the cohort. To complete the program, the pre-service teachers (i.e., the students) had to complete three stages or semesters: Education 401/2, Education 404, and Education 405. The three stages were described in the Professional Development Program (n.d.) outline:

Education 401/402: Integration of Theory and Practice: In Education 401/402, you study teaching through the integration of in-classroom practicum experiences and instructional seminars.

Education 404: Professional Coursework Semester: In Education 404, you choose from a variety of courses that will build on teaching strengths, and eliminate deficiencies in the preparation for teaching.

Education 405: Teacher Semester: In Education 405, you are assigned to a classroom for 10 to 12 weeks of student teaching experience. During this semester, the School Associate and Faculty Associate provide help and guidance, as well as

make assessments of growth towards achievement of standards of professional competence.

These stages of the Professional Development Program fulfill the objective of a “teacher education program that incorporates practical experiences and university coursework, in approximately equal portions” (Professional Development Program, n.d.).

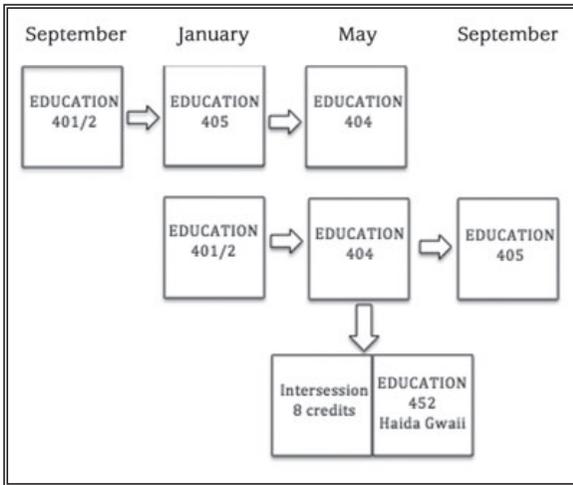


Figure 1. Semester flow for September versus January intake, along with the SEEDs requirement of EDUC 452 (field school)

The SEEDs module was similar in general purpose and structure to the other modules in the teacher education program in that it was designed to educate students to meet the general requirements for certification by the British Columbia Ministry of Education’s Teacher Regulation Branch, and in turn, qualify participants for employment in the province as K-12 teachers. Students in the module were not placed specifically in “environmental” schools or in specific school environmental education programs, nor where most of them supervised in practicums by committed environmental educators as associates. As noted, the focus of SEEDs was on introducing and modeling environmental education curriculum theory as it relates to teacher education.

What made SEEDs unique was that it provided a range of place-based and outdoor field experiences and required teacher candidates to register for an intensive field course held in Haida Gwaii, which could also lead to the concurrent completion of a minor in environmental education, with complementing majors such as Elementary or Secondary Science, Math, English, and Social Studies. In the program design, it was hoped that this continuity of action on

the part of Faculty Associates, School Associates, and the Faculty Sponsor would influence the eventual practices of the SEEDs candidates as they moved to their final practicums and eventually, to professional practice. The efficacy of this approach (and of this model within professional programs) became the focus for this sustained and collaborative study of SEEDs. The next section describes the combination of research approaches and methods used in documenting or describing the efficacy of our approach with the SEEDs module.

Methodology

Zeichner and Concklin (2005), building on the work of Koehler (1985), identified five major areas of teacher education research: (a) surveys of current practices; (b) conceptual, historical, and comparative studies of teacher education; (c) studies of the process of learning to teach; (d) studies of teacher education participants (teacher educators and candidates); and (e) studies of the nature and impact of teacher education (e.g., specific programs, courses, program components, and instructional strategies) and policies that affect teacher education. This case study has research links to the five listed by Koehler (1985); however, the research reported in this paper focuses on the last two in the list. In particular, we focus on a study of the teacher education participants (including the instructional team), and on documenting and describing our approach to pre-service teacher education.

Research Questions and Data Sources

The program of research attempted to better understand the nature and impact of the SEEDs teacher education program as it was conceived, and to document strengths and weaknesses in its implementation. The following lines of inquiry were explored during this study: (a) What types of conceptual change in environmental education and/or pedagogy occurred in the community as the program unfolded? and (b) What key factors encouraged or discouraged pre-service teachers from engaging in environmental education pedagogies during their final practicums?

Through a combination of methods, including learning environment surveys, interviews, focus groups, document analysis, and participant observation, the 12-month life of the program was documented and described as it unfolded.

Participants

This study involved 32 pre-service teachers registered in the SEEDs module of the Simon Fraser University Faculty of Education Professional Development Program in the 2011 calendar year. Participants were recruited in person with the full support of the Faculty Associates and Faculty Sponsor of SEEDs, and

the university's Professional Development Program director. In January 2011, at the start of the SEEDs module, the pre-service teachers were informed of the intention to document the pilot year of the SEEDs module. All participants were asked if they wanted to participate in the study to investigate the learning environment of this module, and it was explained that their participation was completely voluntary. It was also explained to participants that their choice to participate (or not) would in no way affect their grade in the course or the program. In addition, confidentiality and anonymity was assured for all participants. Not only were there no declines of participation among the 32 students, but the students commented later in their reflections how fortunate they felt to have their thoughts and perceptions included in the study. In addition to the teacher candidates enrolled in the SEEDs module, three Faculty Associates—one Faculty Sponsor, and two instructor/facilitators of the SEEDs module—were also involved.

Learning Environment Surveys

The Place-based and Constructivist Environment Survey (PLACES) was developed by one of the authors (Zandvliet, 2012) to assist students in rating educational experiences on eight distinct scales, ranging from community integration to environmental interaction. The scales were developed after an extensive participatory process, and led to the development of a valid and reliable tool that allows students to note their perceptions on a range of factors that influence learning. While the use of this survey is not a major focus of this account of the SEEDs program, we include some summary results to add context for our work in the module.

Participant Observation

Observations were recorded by the authors, who were also participants in the SEEDs module, playing such roles as facilitator, researcher, and/or instructor. These participant observers included the SEEDs' three Faculty Associates (Robertson, Leddy, and Metcalfe), the Faculty Sponsor (Zandvliet), and SEEDs facilitators/instructors (McClaren and Ormond). Our involvement in the program allowed us to get to know the students personally, through informal conversations and formal course interactions. These overlapping roles gave the team an opportunity to document the implementation of the SEEDs module from our own personal observations, but also from the shared experiences of students. This approach has been described as participant-observation, whereby the researcher is a participant in the phenomena being studied but also acts as a researcher in observing and interpreting phenomena (Gall, Gall, & Borg, 2007). Each participant recorded their observations in a journal record throughout the year, recording details observed for each semester of the module.

Document Analysis

In addition to the methods listed above, the researchers had access to a variety of documents that were interpreted for this research. These included the yearly program report that Faculty Associates are responsible for compiling in April of each year. This report provided details on the program as it was being implemented. A second data source was the Faculty Associate and School Associate evaluations for each pre-service teacher in the program. For this study, a purposive sample of six students was selected for inclusion.

Results

Though the study triangulated many different data sources, this paper focuses on the reflections of SEEDs students, instructors, and course facilitators working in the program. More importantly, however, it gives a narrative account of the constraints faced by the community as it attempted to reconceptualize the dominant (hegemonic) model of teacher development common in Canadian teacher certification programs.

Expectations for the Module by the Instructors

Prior to the start up of SEEDs, the Faculty Sponsor (David Zandvliet) was deeply engaged (since 2000) with the university's long-standing environmental education course programming that was offered as the Summer Institute in Environmental Education. A limitation of this had been that it was an elective course and limited to an offering of two sections per year. A module with an environmental education flavour was viewed as being a resourceful way to expand programming and make it more available to pre-service teachers.

In 2004, with the Faculty of Education encouraging faculty involvement in the teacher education program, the Faculty Sponsor was able to set the early foundation of the SEEDs module by creating the Global Communities module. Introduced at the beginning of the United Nations' Decade on Education for Sustainable Development, the Global Communities module allowed him to experiment with re-examining critically the epistemology of teacher education itself. As he reflected:

Conceiving of teacher education as a context for social and environmental change was initially mired with difficulty in this offering as I struggled with many issues including my own identity as a teacher educator. (Zandvliet)

At the same time, he struggled with the dilemma of offering an environmental education-themed module that students could not select for when applying to the teacher education program. While students could list their top three preferences for the module with which they would like be involved, the majority of

students were placed in modules selected by the administration of the teacher education program. This was problematic.

I wrestled with the module's purpose, curriculum, and, more directly, with questions such as "what did 'environmental' mean in a teacher education context where teacher candidates did not identify themselves as 'environmentally-minded?'" (Zandvliet)

As a solution, he decided to reference Bookchin's (2003) notion of social ecology to examine the role of education as/for global awareness, focusing on global stewardship and social justice rather than the more explicit environmental awareness advocated by most forms of environmental education (Sauvé, 2005).

With expectations high for the new SEEDs offering, the Faculty Sponsor hoped that the more explicit nature of a self-identified environmental education focus would allow students to experiment with and develop more robust environmental pedagogies as they undertook the seminars, course work, and practicum that would lead to their professional certification as teachers. These expectations were shared by the Faculty Associates hired to work with the Faculty Sponsor during the implementation year (Robertson, Leddy, and Metcalfe).

In September 2009, Patrick Robertson, the first of three Faculty Associates involved with SEEDs, began a two-year term in this position with the Global Communities module. While working as a teacher in the West Vancouver School District, he completed a Masters degree in Environmental Education and Communication. He noted the need for increased involvement of environmental education in teacher education, and was prepared to make that a focus, writing:

[I] was ready to shift from the classroom to the academy and continue my own transformative learning journey there. (Robertson)

Moving from the K-12 system to a post-secondary context was thus intentional on his part. He wished to continue transforming as an educator, while "also working to change the culture of education in BC." With respect to sustainability and environmental learning in K-12 education, he had entered the teaching profession with the intention of nurturing change in both areas of focus, and brought these guiding foci to teacher education:

Working in PDP with the GC module, there was fertile ground to explore sustainability, environment and experiential pedagogies, and there was a clear (and growing) demand in teacher education and the K-12 system for these content foci. (Robertson)

The second Faculty Associate, Shannon Leddy, began her two-year position in the University's teacher education program in September 2010, also with the Global Communities module. Upon finding out she was to be a Faculty Associate with the module, her first reaction was confusion, as she defined her areas of expertise as fine arts and indigenous education, not environmental education. She confessed uncertainty about why she had been selected to be a Faculty Advisor in this module:

Prior to working at [Simon Fraser University], I was engaged in many of the practices we focused on within our module curriculum [e.g., environmental education]. I took students outside of the classroom, talked about the interconnectedness of all things, and challenged students to make connections for themselves. This had not felt to me as anything other than good practice. (Leddy)

The third Faculty Associate, Selina Metcalfe, began her two-year position with the teacher education program in September 2011. She was seconded from the Surrey School District where she had been a secondary English and Humanities teacher for 15 years:

I came to SEEDs specifically because for the past 10 years I have been involved with the Environmental Educators' Provincial Specialist Association, doing curriculum development, professional development delivery, and advocacy for environmental education in BC. (Metcalfe)

Clearly, all of the instructional leaders involved with the inception of the SEEDs program had high expectations for what they hoped to achieve in their modeling of environmental pedagogy for the pre-service teachers who would enroll in SEEDs. They were committed and experienced environmental educators, and for the most part had collaborated previously on environment and sustainability related projects.

Student Perceptions During Program Implementation

During the SEEDs program, the pre-service teachers were asked to complete the PLACES questionnaire (reflecting on their preferred and actual learning environments). These (baseline) data were supplemented by interviews, focus groups, participant observation, and document analysis.

The PLACES survey was developed to “[measure] student perceptions of environmental education in place-based educational settings” (Zandvliet, 2012, p. 126). The rationale for its use during the SEEDs module was to identify pre-service teachers’ preferred psychosocial learning environment attributes and also, when possible, to gather their perceptions of the SEEDs learning environment as they were actually experiencing it. While these quantitative data are not included in this paper, the results from one such administration during 401/2 (seminar and practicum) provide some context for some of the “dark matters” we encountered in the more qualitative aspects of our work.

Student Perspectives on the Program and Practicum Experiences

In interview comments, students described a range of experiences in implementing environment-related teaching and learning activities. Some clearly reported that they had numerous opportunities to bring environmental themes and concepts into their practicum classes. Many reported taking students outside the classroom/school frequently, to engage in a variety of learning

experiences. At the same time, some students felt that they did not receive as many opportunities to go outside as they would have liked, mainly because of a lack of support from their sponsor teacher/School Associate or because of administrative policies or “school culture” in general. The following comments are representative of student opinions:

In regards to the environmental education aspect of the program, I would have loved to learn how exactly one could incorporate it into the already established curriculum. It would have been nice to see or watch a teacher incorporating this aspect into their everyday lessons in a real classroom setting ... (Student 1)

I had a difficult time bringing aspects of environmental education into the classroom everyday but I would have to say at least once a week I was able to relate environmental education into my lesson. (Student 2)

One participant remarked that the teachers in his placement school were very much in favour of incorporating environmental education into regular classes and using the environmental education framework as an organizer, and that they loved “*the approach but when applied [he] was discouraged by school culture.*” This student clarified this remark, noting that he “*implemented [the CARE framework] into planning in multiple subjects but [felt] discouraged by the school.*”

Another student remarked about a critical issue for consideration in developing a pre-service teacher education program like SEEDS with a goal of fostering teachers’ abilities in environmental education when she wrote:

Maybe the School Associates picked for students should be thoughtfully picked and be supportive of environmental education or outdoor learning.

On the other hand, another student expressed a less optimistic view:

I have learned that environmental education is easier said than done. We are going against the grain.

Faculty Associate Comments

What follows are some of the comments with regard to the (non)expression of environmental education in the practica of SEEDs students from one of the Faculty Associates (Metcalf), regarding the SEEDs students she supervised. In her judgment:

The majority of expressions of environmental education in the SEEDs students practica was superficial, like initiating recycling programs and taking the class outside. There was no community/place-based aspect to their practice. That is main point here, what was lacking were the community interactions.

It doesn't matter if 17% of them did show elements of environmental education in their practice, it was never anything profound or lasting ... there was no real concerted effort, systems thinking, or making large societal/environment connections. It did not go from classroom practice to active citizenship.

The students that did, it was not because of this SEEDs program, these were values dear to them, and they would have done the same whether they were in the SEEDs module or not.

Another Faculty Associate (Leddy) believed that this was because of the lack of supportive School Associates, and in turn because of the lack of attention by the program administration to pair School Associates with modules that mirrored their areas of expertise and interest.

Environmental education was never modeled for them in the classroom. The majority of the associates were not sympathetic to environmental education, and therefore did not model it to the SEEDs students, who need this to be shown in practice. ... What we end up with then are School Associates who are not the mentors these teachers need, something these students voiced to us.

Discussion and Conclusions

Despite our expectations for the SEEDs program, once implemented, the instructional team found serious impediments to implementing our intended environmental education focus within the context of the Professional Program and these became the root of the “melancholic” reflections emerging from our work. Despite the positive learning environment created in the program, these darker issues arose more from a careful consideration of whether or not the program was indeed effective in changing student conceptions of environmental education or in developing environmental education in their emerging pedagogical practices: key outcomes anticipated for students in the SEEDs program. To a large extent, our findings suggest that it is in fact some of the systematic requirements of the teacher education program itself that may have constrained our potential—particularly the structure of the seminar and practicum aspects of the program, which are firmly rooted in the culture of schools (generally) and were not supportive of our goals in fostering environmental education and environmental pedagogy.

In the Faculty Sponsor’s final reflections on his experiences with the SEEDs module, he stated:

I have no doubt that we created a very positive and engaging model for students as they developed as teacher professionals but I also question whether we achieved any greater gains with this model of environmental education as opposed to the earlier models of workshops and intensive course experiences. I do note that many students highlighted the Haida Gwaii field experience (for example) as the highlight of their program—but this was the only part of the program that lied outside of the formal structure of the program. (Zandvliet)

The limitations of offering a more robust environmental education experience for our students during 401/402 in future years seems to be confounded

by policies and practices related to the hiring and secondment of Faculty Associates, the recruitment and selection of School Associates, and inconsistencies across the program in defining the role of the Faculty Sponsor. At times the Faculty Sponsor felt that he “*had little or no influence on these processes and so perhaps, pre-service teacher education, due to a bureaucratic structure, is not the most productive venue for environmental education.*” The inference here is that reforms should be made to these practices within the professional programs.

We further lament that beyond these aspects of the academy that are dysfunctional and resistant to institutional change (as previously noted), the most significant “dark matters” in teacher education are encountered at the interface of the academy and K-12 systems. One Faculty Associate remarked:

Teacher candidates descend from the Ivory Tower; they move into K-12 institutions that have a marked conservatism at their core (not always a bad thing as the latest “best practices” tend to be conserved as well as others). Despite many progressive teachers in our midst, the K-12 system tends to be resistant to practices outside of current norms and can exhibit an intransigent stolidity when it comes to re-examining its forms and functions collectively and effectively. (Robertson)

Teacher candidates, filled with idealistic notions of personal change and systems change grown at the academy, enter the deeply entrenched culture of the public school where the dissonance is almost immediate. Behold the school building whose form and functions haven’t changed much in 150 years. The students then meet with a mentor who may or may not share their values or inclination to convene place-based, experiential learning. Add this resistance to an experience that involves a class composed of 20 or more students with diverse needs, interests, and backgrounds, and a profession where the intense workload drives most (50%) out of the business within five years (see Ingersoll, 2012).

The barriers to progressive teaching practices related to environmental learning, from prescribed curriculum and testing to a lack of time, resources, and support, are clear (see Cirkony, 2012; Robertson, 2007). In addition to these barriers, teacher candidates are entering into intense, power-laden mentorship relationships and school communities (some are not supportive of a focus on sustainability or environmental learning). The selection of mentors is a process that takes time, funding, and effective relationships to do well, and there has been an erosion of these key ingredients to effective placements in the professional programs in recent years. Finally, the program requires teacher candidates to perform at a high level of effectiveness in order to succeed (in the eyes of their mentors), and progressive practices may involve risks that some are less willing to take. In summary, supporting teacher candidates to develop the knowledge, skills, strategies, and courage to enact change in schools through progressive practices related to environmental learning and experiential pedagogies is an ongoing challenge for teacher education.

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