



Educating for Environment: A School-As-A-Community Project

Educar para o Ambiente: a escola como um projeto comunitário

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Abstract

In this E4E (Educating for Environment) pilot project we explored the delivery of inquiry-based environmental education within a small, rural elementary school in Ontario, Canada, using a school-as-a-community model, rather than the more common single grade model. At the outset of the project we wondered if environmental education could be significant in building social capital, that is, building a stronger school community, and also, if the strong school community would respond to their experience with enhanced pro-environmental attitudes and behaviours. Since this paper is based on a small pilot project, not all of our wonderings were realized, yet we are encouraged by our findings and see environmental education as much more than a discrete set of lessons in a science curriculum within a school building. Qualitative data comprising of interviews and a focus group was collected at the completion of the two-week project. Analysis points to benefits in the form of increased understanding of and for the environment, and strengthening of social capital within the school, both of which support the development of environmentally and socially conscientious citizenship amongst participants.

Keywords: environmental education; social capital; environmental citizenship; inquiry-based learning.

Resumo

Neste projeto piloto de educação para o ambiente, exploramos a oferta de uma educação ambiental baseada na investigação em uma pequena escola primária rural, em Ontário, Canadá, usando um modelo de escola como uma comunidade, ao invés de um modelo mais comum de série única. No início do projeto nós nos perguntamos se a educação ambiental poderia ser significativa na construção de capital social, isto é, a construção de uma comunidade escolar mais forte, e também, se a comunidade escolar forte iria reagir à sua experiência com o aumento de atitudes e comportamentos pró-ambientais. Uma vez que este documento é baseado em um pequeno projeto piloto, nem todas as nossas perguntas foram respondidas, por ora somos encorajados pelos nossos resultados a ver a educação ambiental muito mais do que um conjunto de aulas em um currículo de ciências dentro da escola. Os dados qualitativos provenientes de entrevistas e de um grupo focal foram coletados após a conclusão de duas semanas do projeto. A análise aponta para benefícios como o aumento da compreensão do e para o ambiente e o fortalecimento do capital social dentro da escola, os quais promovem entre os participantes o desenvolvimento de uma cidadania ambiental e socialmente conscienciosa.

Palavras-chave: educação ambiental; capital social; cidadania ambiental; aprendizagem baseada na investigação.

Introduction

Environmental education (EE) has become a global initiative, articulated first in the 1977 Tsibili Declaration, and then brought into sharp focus by the United Nations' Decade of Education for Sustainable Development 2004 - 2014. The growing global awareness that environmental concerns are intricately connected to issues of social and environmental citizenship has entered the education mainstream. Subsequently, a myriad of studies, reports, and programs have explored the efficacy of varying forms of EE, most of which indicate significant benefits for student learning (COEO, 2007). In this paper we explore the delivery of inquiry-based environmental education within Two Rivers School (pseudonyms replace all names in this paper), a small, rural elementary school in Ontario, Canada. At the outset of the project we wondered if EE could be significant in building social capital, that is, building a stronger school community, and also, if the strong school community would respond to the EE experience with enhanced pro-environmental attitudes and behaviours. Since this paper is based on a small pilot project, not all of our wonderings were realized, yet we are encouraged by our findings and see EE as much more than a discrete set of lessons in a science curriculum within a school building.

Environmental Education

Since the Tsibili Declaration in 1977, scholars have taken on the task of defining and describing EE (e.g., GRUENEWALD, 2004, pp.72-75; HART, 2007; ORR, 1992) and educators have developed a myriad of EE teaching and learning experiences (e.g. DAVID SUZUKI FOUNDATION, 2006; MONROE; KRASNY, 2013), resulting in a rich and

decidedly diverse field. While EE has been traditionally housed in the Canadian science and/or geography curricula (OME, 2004; 2007), it continues to evolve in ways that make it accessible to many other subject areas (OME, 2009). Environmental education is a pedagogically rich format for integration among and with other school subjects, making it possible to develop an educational discourse around socially and environmentally responsible citizenship.

One of the most important venues for EE is the outdoors (COEO, 2007) and is most often incorporated into science and geography curricula (Stevenson, 2007, p.140). However, beyond the acquisition of content knowledge, outdoor education is itself viewed as an important component of developing the environmental and social sensibilities of students (COEO, 2007). Through the promotion of an ethic of care for self, care for others, and care for the natural world (BEAMES; ATENCIO, 2008, pp.105-106), outdoor education can support students in becoming socially and environmentally aware citizens.

In 2009 the Ministry of Education for the province of Ontario, Canada, mandated that education *about, in, and for* the environment be embedded across all public school curricula (OME, 2009), thereby creating curricular spaces for EE in all grades and subjects. However, in formal Ontario school settings teachers often view EE as a special topic requiring specialized skills and equipment (STEELE, 2011, p.15). In 2011, 78% of teachers working in the school board that supported this project, indicated they had not had any EE training (SCOTT, unpublished data). Instead, specialized EE is commonly provided to specific grade(s) when they travel to outdoor education centers (COEO, 2007). Thus, for many students, EE becomes a stand-alone experience, rather than one that informs subjects throughout the school grades and supports continued development of socio-environmental citizenship.

School Community and Social Capital

Social capital theory, a loosely defined construct in sociology that refers to the development of beneficial cooperative relationships between individuals and/or groups (BEAMES; ATENCIO, 2008, p.101) emphasizes, and is built on, trust, reciprocity, and mutual obligations (BOONE, 2011, p.21), which are certainly fitting values for themes in environmental and social sustainability. Dewey (1907) understood schools to be small social communities. A sense of community within a school can be viewed as a form of building social capital: that is, creating a school with a climate conducive to learning (RULE; KYLE, 2009, p.295), a set of behavioural norms that are encouraged by the community (BOONE, 2011, p.21), and, a prevailing sense of belonging, inclusion and collaboration (ROFFEY, 2013, p.39). Building social capital within a school, between teachers, students, parents, and administrators is a form of bonding (ROFFEY, 2013, p.39) that establishes strong ties and agreements regarding goals and approaches. Parental involvement, along with activities specifically designed to build trust and reciprocity further strengthen social capital (BOONE, 2011, p.24).

If we consider a school to be a community, then engaging as a community in EE over time might have benefits that are not realized in the single-grade, one-trip model of EE delivery. We wondered if implementing EE in a school-as-a-community model might

provide more meaningful learning experiences and perhaps develop a stronger commitment to pro-environmental behaviours amongst participants. Indeed, we wanted to take the concept of an education community one step further, to create connections between a school community and our university community. In such a model, by sharing the common goal of engaging in EE and strengthening the commitment to environmental and social sustainability, we would engage in a form of bridging social capital (ROFFEY, 2013, p.40). In this bridging/partnership model both communities have participatory obligations, and both communities derive some of the benefits stated above (DHILLON, 2009, p.687-688). In our case, both school community and our university would share in the work, and in the wealth of learning derived from it.

Describing the Project

The E4E pilot project was initiated during the winter of 2013, as we (professors at the Schulich School of Education at Nipissing University) entered into a partnership with administrators from a local school board. Together, an overarching plan was established whereby EE experiences would be developed in cooperation with teachers in one elementary school. Two Rivers School was chosen by the school board administrators in the belief that it would particularly benefit from a special project. Two Rivers is a small Kindergarten to Grade 6 school with approximately 150 students and eight teachers, serving a rural demographic with high unemployment, relatively low school success rates, and a somewhat transient teaching staff. In essence, school administrators hoped that a special EE project taking place in the school's home community, with parent volunteers, in the natural environment and at the university, would provide Two Rivers with a positive shared environmental learning experience, and encourage students to reconsider their futures as students and citizens.

In advance of implementation (MAY, 2013) five E4E facilitators (pre-service teachers) were hired for the project, and two Two Rivers teachers (Alice and Joe) with a strong interest in EE, named *school champions*, volunteered to assist in the coordination of the overall program at the elementary school. Of the other six teachers, two were male (Andre and Fred) and four were female (Louise, Mary, Sylvia and Jenn), with varying years of experience ranging from two to twenty years.

Several collaborative planning sessions with school administrators, the five E4E facilitators, the two school champions, the six other participating teachers, and ourselves, resulted in the development of both outdoor and in-class inquiry-based learning opportunities for students, engaging in subjects including science, visual arts, language, and mathematics.

On each day of the first week of program delivery different classes from the school (e.g. Monday: Grades 3-4; Tuesday: Kindergarten) were driven 50 minutes from their school to the university. Once there, the five E4E facilitators engaged participants in inquiry-based activities, both in a classroom and in the forest behind the university. The second week saw the university team travel the 50 minutes to deliver EE programs at the students' school. There, E4E activities took place indoors in various classrooms, as well as in the small wooded lot that is part of the school property. Students, teachers, Educational Assistants and parent volunteers all participated in the inquiry-

based activities during both weeks. Activities included nature hikes to observe biodiversity, art creations using found natural objects, games that modelled systems in nature, and music with instruments found in nature.

The final afternoon was spent in a celebration attended by all members of the school and its local community, several board administrators, and project coordinators. Students' science and art work was displayed; students performed oral readings and a drama presentation, and they created the E4E Tree fully leafed with *pledges for the environment*. In addition, over two dozen trees were planted on the school property; these were accompanied by enthusiastic offers by students and parents to keep them watered and weeded through the coming summer months.

Data Collection and Analysis

After the conclusion of all E4E experiences the two *school champions*, five facilitators, and two researchers engaged in a focus group discussion that lasted approximately one hour. Topics covered in the discussion included: benefits of the project for the students, the teachers, the school, and for the community; strengths and weaknesses encountered within the programming; the specific efficacy of inquiry-based pedagogy; and recommendations for future projects. Semi-structured interviews lasting approximately 15 minutes each were conducted with the remaining six teachers. These shorter conversations focused on individual teacher's reactions to the topics named above, with specific reference to their own students.

Audio recordings of the individual and focus group interviews were transcribed and the data coded according to two themes: the *EE teaching and learning experience*, and the *experience of community*. Deductive analysis, in which the coding categories are established prior to immersion in the raw data is generally used in quantitative analyses, but is also considered useful in qualitative content analysis (ZHANG; WILDEMUTH, 2009). We used the two broad coding categories as starting points for further inductive analysis within each category.

The EE teaching and learning experience

An inquiry-based approach, valued both in science (OME, 2008) and EE (COEO, 2007) teaching, was the pedagogical basis for planning the E4E learning experiences. One of the most powerful inquiry-based experiences for the students, as reported by the facilitators and teachers, occurred when the Grade 5-6 students investigated the various types of dams built by beavers and by humans, and then were tasked, without much guidance, with constructing a dam on a small stream. The messy learning that ensued was remarkable. "When all the kids are excited, and the little ones come back and talk about the dam building to their brothers and sisters or vice versa. When people get enthusiastic about learning, I think that's good for everybody." (Jenn)

The inquiry-based approach was appreciated by the teachers, who recognized the value of "bringing the outdoors in and the indoors out...breaking down boundaries... breaking down that wall between the classroom and the schoolyard" (Alice) to enhance student engagement and learning. Indeed, the out-of-classroom venue proved invaluable for

some students: “kids are digging in a garden, lifting up rocks, engaged and doing...my kids who are engaged the most are the kids who would typically not be successful. I've found another way for them to thrive and learn.” (Louise)

A number of teachers cited the hike through the deciduous forest as a highlight for their students. They then expressed their deep concerns that many of their students are spending their childhoods plugged into technology, rather than exploring the natural world:

(Andre) (we) were saying that what shaped us as environmental thinkers started when we were little... Th(is) generation that is just sitting on their computers in their bedrooms, not talking to people and having authentic experiences outside of their little bubble...I don't think it's healthy and I don't know how they are going to connect to the world that they're living in.

And yet, the E4E learning experiences were significantly enhanced by digital technology. Photo-documentation of learning, in which students are provided a camera, iPhone, or iPad for taking pictures as part of the learning experience, was a common practice at Two Rivers prior to the E4E project, so this method of inquiry required minimal instruction. Students were given the use of a class set of university iPad Minis with which they, either individually or in groups, took 5-10 pictures. A selfie (i.e., a photo taken of oneself) was used to identify the block of pictures taken by each individual or group. The pictures were later printed and made into collages and information posters by the students as a way of expanding on and documenting their learning. The collages, though not a formal part of our data collection, spoke to the multiple ways in which students perceived their experiences -what they found important or extraordinary - what they wanted to keep and share with others - and from which they continued to learn long after the E4E event. “They connect with it (their collages), continue to reflect and build on it, they talk to each other about it, that is lasting. Without the technology it wouldn't be the same.” (Mary)

Indeed, older students engaged in higher level thinking as they moved beyond photographing simple objects, instead attempting to depict processes such as the rock cycle or the water cycle.

The experience of community

We found that social capital theory was helpful to analyze the experience of community, both from an internal bonding perspective and also to understand the bridging or partnership that formed. We asked all interviewed participants to comment on the strategy of involving the entire school in the E4E project. Their responses reflect their investment in building a strong school community.

Bonding social capital

The participating teachers recognized that many different people, with a variety of interests and strengths had been brought together and asked to share a common objective, that of providing an EE experience for the students. As the collaborative planning process took place, and then throughout the implementation of the project, common experiences and knowledge accumulated and became part of the entire

school experience. The sense of shared experience went beyond the school walls and entered the larger community through family interactions:

(Alice) even if they weren't all at the same location on the same day, they can talk to each other about that ... we have families spread across grades ... allowing them to reflect on a common experience, the kid in grade one and grade six and kindergarten all bring it to the table at different times.

The teachers at the school encouraged a shared sense of E4E purpose with their students. "We've walked by the bulletin board with everyone's work on it and talked about why they made what they did with those items, and commented on other classes' and other student's work. "(Mary) "Everybody's involved. Everybody's under the same umbrella, the same family of a school." (Joe)

The implied sense of family points to social capital that was highlighted and possibly strengthened by the E4E experience. This was particularly felt by the kindergarten teachers who deeply appreciated the inclusion of the youngest members of the school community. Picture a sea of pink jackets and backpacks pouring from the school bus, little people wandering the university hallways, excitedly heading to the E4E science room! "They get left out of everything. From my perspective down at the bottom of the pile, I think it's crucially important ... to start learning early, to have them involved early." (Mary) Echoing the same sentiment, Joe stated, "there were some concerns because the kindergarten class is so young, and what about behavioural problems, but they were engaged. They need to be involved young."

Clearly, the school community must build social capital that is inclusive of all members, even its youngest, however, the E4E project provided the teachers with common experiences as well. "We, as a staff, definitely had discussions about it in the staff room. Just to talk about how it went and how great it was." (Fred)

The teachers appreciated the broad scope of learning taking place. "The students enjoyed going as a whole and being with students from different classes, and as a teacher I could see the growth of the curriculum." (Andre) "You can see the whole continuum of learning. ... a great way to bring the whole school together." (Louise)

We did, however, find that at least one teacher felt that she had been left out of the collaborative planning process and harbored some resentment over this. As Beames and Atencio (2008, p.107) point out, the downside of social capital is that it can act as an exclusionary barrier, resulting in 'outsiders' who do not share fully in the work or the benefits of the experience.

Bridging social capital

The establishment of the relationship between the university facilitators, the school board administration, and the school champions and teachers was viewed as extremely important:

(Joe) This is a pilot project, so we're figuring this stuff out along the way, but I think that the teachers, the university, and (the administrators) all need to get together and figure out what the common goal is and how we're going to execute that right in the beginning.

Although collaborative planning was facilitated by meetings and numerous emails nonetheless, ideas and plans were occasionally miscommunicated amongst the large number of collaborators, creating occasional confusion and slowing the progress of bridging social capital amongst the developing E4E community. At those moments the facilitators' and the champions' commitment was crucial to moving the project forward. "I had to do a lot of logistical organization and problem-solving that I didn't expect to have to do. I took it on willingly because I wanted to see the project move forward." (Joe)

An unexpected example of bridging social capital arose during a discussion of the inevitable transience of a number of the teachers at the school. We were concerned that when teachers were moved to other schools, their sense of community and shared E4E experience would be lost. However, it was pointed out that losing teachers could be viewed as a dissemination of EE teaching and learning methods:

(Alice) They take their experiences wherever they go, so then maybe there's a seed in wherever they land. I'm not going to stop doing environmental education...I'll take that with me wherever I go...so it's not a waste even though it's a transient teaching population.

Thus, transient teachers who are committed to environmental education might act as significant bridges as they bring EE to their new schools.

The most heartfelt example of bridging social capital was when the students were excited to see the E4E facilitators arrive at their school and invited them eagerly into their classrooms; the development of a sense of community was becoming real for all of us.

Summary and Importance of Findings

In summary we consider the two themes that guided the coding of data for analysis. Firstly, *the EE teaching and learning experience*, based on inquiry-based pedagogy, seemed to be very successful for student learning in that it led to additional posters, artwork, and writing, as well as generating discussion amongst the participating teachers and facilitators. The participating teachers welcomed and valued the inquiry-based approaches; while these were not new pedagogies for them, the out-of-classroom nature of the program provided a fresh perspective. Inquiry-based (both teacher-led and student-led) learning has tremendous potential in the field of EE, as it encourages subject integration and ownership of learning. In addition, digital technology supported student inquiry, requiring students to observe their surroundings, and allowing them to bring their learning into the classroom without disrupting natural flora and fauna for the purpose of collection. With the teacher as mediator, technology was conscripted as a significant learning tool as opposed to a source of entertainment.

Secondly, social capital theory was useful in our analysis as it provided a theoretical framework for considering how the E4E project impacted Two Rivers as a school community. The cumulative shared experiences of the teachers and students at all grade levels, which culminated in a celebration of learning, are evidence of several indicators of bonding social capital: a supportive learning environment (NOONAN, 2004); collaboration amongst teachers (RULE; KYLE, 2009, p.293) and, the

development of stronger ties between participants. Bridging school social capital was enhanced through the collaborative work done by the Two Rivers school champions and the university facilitators; both communities had responsibilities and both derived benefits as they worked toward the common goals of EE (BEAMES; ATENCIO, 2008, p.109) embedded in the E4E project. Even when teachers are transient, they can be disseminators of EE skills and knowledge, transplanting their experiences from one school to another.

The implementation of EE on a school-wide basis, rather than on the more common grade or topic basis, realized unexpected benefits; the whole school shared common inquiry-based learning about their environment, and that shared learning provided opportunity to strengthen/bond the school-as-a-community. In addition, the link between outdoor education and environmental citizenship was realized as participants were given opportunities to strengthen their ethic of care for others and for the natural world (BEAMES; ATENCIO, 2008, p.105).

Generally, our analysis suggests that the school community was supported by the E4E project, but we cannot say with certainty that environmental attitudes and behaviours of students and teachers were strengthened (We did not measure these for the purposes of reference before the project, so we can only comment on the data at hand). We can say that the teachers and students enjoyed the activities and eagerly participated in all that was offered. We were reminded that developing environmental literacy, along with an environmental ethic, is not an either/or undertaking. It is a process of growth in knowledge, experience, and in confidence, that requires time and ongoing support.

Concluding Thoughts

The E4E project resulted in significant inquiry-based for the teachers and students involved. The school-as-a-community model for delivering environmental education shows promise in enhancing social capital within the whole school, across a variety of curricula areas, and in developing a caring form of citizenship. There is no question that a longer project over time is required to assess the efficacy of this model for transformational changes.

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