

Cultivating artistic approaches to environmental learning: Exploring eco-art education in elementary classrooms*

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Abstract

This article explores curriculum development in eco-art education, an integration of art education and environmental education, as a means of increasing awareness of and engagement with the environment. It reports on a qualitative research study that tracked teachers' experiments with the design and implementation of eco-art education in elementary classrooms. Guided by the framework of collaborative action research, a team of educators generated practical and theoretical knowledge to plan, implement, observe and reflect on eco-art curricula and pedagogy. As the first inquiry to examine eco-art education in a sustained way across multiple school sites, it makes a significant contribution to the emerging knowledge and growing discourse of eco-art education by demonstrating how arts-based learning at the elementary level can align with and support environmental education concepts and pedagogy.

Keywords: Children's visions, future, education for sustainable development, intergenerational relations, phenomenology

Introduction

In 2007 Hicks and King called for 'new artistic visions and narrative-based understandings' (2007, p. 335) to develop humans' means of living more responsibly on this planet. By re-affirming the need for art educators to address the environmental crises of our times through their theoretical and pedagogical practice, they continued a significant yet intermittent conversation running in art education circles since the 1970s. Yet few outside of these circles are aware that art educators have been playing a role in environmental education in recent years. As an educator focused on teacher training, I share Hicks and Kings' belief in the importance of this endeavor, manifested in my ongoing research into how to use visual arts education as a means of envisioning new routes into environmental and sustainability education. In response to their call, this article presents the results of the one of the first sustained qualitative studies into environmental art education in North America.

Using a framework of collaborative action research, this study aimed to investigate how integrations of environmental education and art education could be manifested in elementary classrooms. It was grounded in the core belief that art education can and should be used to foster environmental literacy, and that developing this form of literacy in children is considered by many educators to be essential to the continued existence of

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human life on this planet (Orr, 1992; Thomashow, 1995; Smith & Williams, 1999). In the past, environmental literacy work has been developed and implemented primarily by science educators (Sauvé, 1998; Palmer, 1998; Gurevitz, 2000). While environmental education has made some headway in this in the past, some researchers in that field (Hungerford & Volk, 1990; Leeming, Dwyer, Porter & Cobern, 1993) freely admit that this progress has been limited as there has been more success in inducing learners' attitudinal shifts than in changing their behaviors to lead to living more lightly on the earth.

Art education offers a dynamic way to increase the power and relevancy of environmental education by providing an alternative means of furthering learners' ecological literacy. This assertion has support from experts in environmental education; for example, Orr (1992) argued that ecological literacy would only be developed in children if it is integrated into a wider variety of subject areas such as the arts. The need for more arts-based, affective approaches to environmental education has been echoed by many others (Graff, 1990; Adams, 1991; Lindholdt, 1999; Gurevitz, 2000; McKibben, 2005; Gradle, 2007; Palmer, 1998; and Graham, 2007). I share with these authors the belief that the values-based, subjective orientation of learning often found in art education not only helps change learners' attitudes about environmental concerns, but also offers the possibility of altering their behavior towards the environment. By providing the means to reach learners' minds as well as touch their hearts, the arts have the potential to become powerful allies in fostering environmental literacy.

This can be achieved through an interdisciplinary endeavor called environmental art education, or eco-art education in brief¹. Eco-art education integrates knowledge, skills, values and pedagogy from the visual arts, art education and environmental education as a means of developing awareness of and engagement with environmental concepts and issues such as place, interdependence, systems-thinking, biodiversity, and conservation. In this it offers opportunities for artistic forms of environmental activism for students of all ages that encourage the development of creativity alongside cross-curricular learning in pursuit of the higher goal of sustainability.

As an emerging area of inquiry, eco-art education also provides a means for art educators, artists and scholars to contribute to the greening of art education, a re-thinking of how we can effect positive environmental change and help grow a more sustainable praxis in and through our discipline. This entails not only a philosophical shift, one that re-connects art-making and art education to the issues and concerns of the communities in which these take place, but also a practical shift that reduces the waste and toxicity on which many art programs are built. It aligns art education with a social reconstructivist agenda and encourages educators to consider learning in, through and about art in relation to the environment in their practice.

Eco-art education draws inspiration from activist artists who have been responding to environmental issues and concerns in creative ways for over three decades, including Joseph Beuys, Hans Haacke, Alan Sonfist, Agnes Denes, Mel Chin, Newton Harrison and Helen Mayer Harrison, Lynne Hull, Mierle Laderman-Ukeles, Dominique Mazingue, Andy Goldsworthy, Chris Jordan, Brian Jungen and Edward Burtynsky, to name only a few². These artists, and the next generation following in their footsteps, have touched countless viewers through their understanding of environmental concerns as well their innovative solutions for them, thereby reaching people in ways that scientists and academics have been unable to do.

Scholarly conversations have also contributed to the development of eco-art education, the roots of which can be traced to writings on environmental design (McFee & Degge, 1977),

green aesthetics (Jagodzinski, 1987), and place-based art education (Blandy & Hoffman, 1993)³. Gablik's (1991, 1995) work on connective aesthetics helped to lay the groundwork as she articulated the need for better connecting art to the realities of daily living by detailing a shift from modernist to reconstructivist, postmodern aesthetics⁴. By arguing that art can be used effectively as an agent of social change, she believed that art could capture the public's attention through its innovative approaches to society's social and environmental problems.

These early voices were strengthened by other scholars' contributions to the discourse. Neperud (1995) positioned eco-art education as a community-based endeavor that could lead those involved from environmental awareness to environmental action. Lankford (1997) drew from the scientific roots of environmental and ecological education by defining eco-art education as 'purposeful creativity' where people were 'attempting to reconnect with the earth in positive, restorative, and often spiritual ways' (p.50). His article was part of a special issue of the journal *Art Education* that focused on art and ecology, a major step forward that brought a new level of attention to environmental art and its emerging relationship to art education. Further contributions from Ulbricht (1998), Garioan (1998), and Krug (2003) began discussions about pedagogy appropriate for this area: they advocated for an approach that was community-based, interdisciplinary, experiential, dialogic, ideologically aware, and built on the values of empathy, sustainability, and respect for the environment. These same qualities were evident in more recent additions to the literature from Gradle (2007), Graham (2007), and Inwood (2008, 2010), all of whom argue for grounding eco-art education in place-based approaches to learning.

Other educators have deepened the conversation on eco-art education by experimenting with eco-art lesson and program design. Barbosa (1991) implemented learning about environmental art in a museum setting, while Blandy and Cowan (1997), Birt, Krug, and Sheridan (1997) and Anderson (2000) documented programs in natural environments. Others have focused on the use of re-using and recycling in art-making (Elliot & Bartley, 1998; Gomez, 1999; Congdon, 2000.) Taylor (1997), Keifer-Boyd (2001), Holmes (2002), Rosenthal (2003) and Anderson and Milbrandt (2004) described courses for secondary and college learners in this area.

Yet what has been clearly missing in this literature is a richer mapping of two areas of eco-art education that to date have received minimal attention: one is a focus on generalist teachers' engagement with eco-art education, and the other is on elementary settings. If generalist teachers are to introduce and teach students about eco-art education, they need to develop curricula in this area. How do they do this with little previous learning in this area, and with few resources at their disposal? The second gap centers on elementary settings, as most of the case studies reported on to date have been in secondary or post-secondary settings. Can teachers create learning appropriate for elementary students that integrates art and environmental education? If so, what does this learning look like? This study aimed to help fill these gaps in the literature by investigating teachers' experiences in developing curriculum for and delivering eco-art education in their elementary classrooms.

Methods

This inquiry brought together four elementary teachers with a university-based educator (myself) to investigate the experience of developing working models of eco-art education through the framework of collaborative action research. The teachers were positioned as co-researchers to explore the development of curriculum in eco-art learning, as well as its benefits and challenges. The key questions of the study focused on what eco-art education looks like in elementary classrooms: how do teachers connect learning in the visual arts to

environmental concepts and issues? What forms the curricular content and pedagogy of eco-art lessons? And what challenges do teachers face in implementing eco-art education with their students?

Collaborative action research provided the framework for a team-based approach centered on cooperation and co-learning, and gave room for multiple voices to contribute to the development of eco-art curricula. As the main elements of collaborative action research include empowering and involving all team members, information sharing, creative and co-operative problem-solving, and cultural transformation (Oja & Smulyan, 1989; Schensul & Schensul, 1992), all members of the research team were involved in these activities. The teacher-researchers focused on developing, implementing and reflecting on eco-art lessons that were firmly grounded in the realities of classroom life. They participated in completing an initial questionnaire to ascertain their starting points, and collected data on their experiences as the year progressed by making observations and field notes, keeping reflective journals, and taking photographs. The teacher-researchers were involved in the initial stages of analysis by reflecting on their experiences, sharing these with the team, and using them to inform new iterations of the action research spiral central to collaborative action research: planning, implementing, observing and reflecting (Lewin, 1948; Kemmis & McTaggart, 2003). As lead researcher I facilitated the team meetings, participated in the data collection by observing lessons in each of their classes, and acted as a participant observer to assist with lessons as required. At the study's end, bringing together the questionnaires, journals, field notes, journals, photographs, artworks and meeting transcripts resulted in a rich set of textual and visual data that was used in the analytic and interpretative phrases of the study.

In these phases we were guided by Herr and Anderson's (2005) approach to data analysis and interpretation: they advise that data analysis begins immediately in action research and continues throughout the research spiral as it 'guides further data gathering and decision-making' (p. 80). The early stages of analysis began after the first group meeting (as each meeting was audio-recorded and transcribed into written form) and continued throughout the nine months of the inquiry. The analysis evolved individually for the team members as well as collectively in the meetings, evident in the research journals and in the meeting transcripts. Analysis in the journals was formative and summative in nature, and transpired as a natural part of the actions taken by each team member. Perhaps not surprisingly given their busy schedules, the teacher-researchers chose not to be involved in the traditional qualitative analysis techniques of coding transcribed and written data that I employed after the data collection phase ended. This is most likely a manifestation of one of the tensions of collaborative action research (Herr & Anderson, 2005)⁵; they were satisfied with their roles in the curriculum development process, but saw the data analysis, interpretation and reporting as part of the more formal research study, which they perceived as my responsibility as an academic. I undertook this part of the study via a combination of coding, thematic analysis, concept-mapping, revisiting data for deeper understandings, and member-checking, all commonly used in qualitative forms of research, guided by the work of Wolcott (1994), Mills (2003) and Herr and Anderson (2005). These processes resulted in the identification of patterns in the teacher-researchers' practices in terms of inspiration, alignment to environmental learning, definitions of eco-art education and pedagogical strategies. It also led to a discussion of the potential benefits, challenges and barriers to eco-art education for elementary educators, as well as a range of insights into curriculum development in this area.

I also utilized strategies from arts-informed research⁶ to deepen the interpretative process and frame the data in a variety of ways (as imagery as well as text). This resulted in the

study being presented in three ways: as a formal report, as a textual/pictorial narrative, and as a series of 'portraits' of the teacher-researchers, presented in the form of sculptural books (see illustration 1 for one example). The narrative was a means to provide multiple entry points into the report through text/imagery integrations, ones that illustrate the study's key themes through a more personal lens. It aimed to demonstrate that not only had I immersed myself in eco-art education in a theoretical way in the course of this study, but that I had also incorporated it into my teaching and artistic practice as well; it has become part of my lived experience as well as that of the teacher-researchers. The sculptural books, in addition to acting as an alternate means of interpretation, were also a personal challenge as an artist: I wanted to recognize the power of visual culture by sharing the study's data in different artistic forms, and potentially widen the audience for the inquiry beyond the traditional confines of the academy.

The Teacher-Researchers

The teachers-researchers worked in four schools spread across the city of Toronto, Canada. They were experienced educators, each with more than fifteen years of teaching experience, who had taught in elementary schools for the Toronto District School Board. The TDSB has had a growing Ecoschools program in place for over a decade, helping students, teachers and their schools embed conservation, stewardship and sustainability practices into their curricula and school culture⁷. All of the teacher-researchers were working in certified Ecoschools at the time of the study. Dorie, an experienced teacher of thirty years, taught grade five in a K-6 school on the east side⁸. As a generalist teacher, she had a love of art and an interest in the environment but no special training in either; she was clear from the outset that she wasn't sure what she could bring to the team. Astrid, a primary teacher with a strong track record of life-long learning, split her time between two classes (a grade one class and a grade five special needs class) at a school just a few blocks from the edge of Lake Ontario. As a dedicated leader of the school's Eco-Club, she had a desire to learn more about how the arts can help children learn about the environment, but didn't know where to start. Karen brought a deep dedication to the arts, outdoor education and environmental learning to her grade 2/3 class in a west side school; this school was situated within walking distance of one of the largest parks in the city. Karen had joined the research team to explore how to integrate these areas of interest, as well as to find some moral support as she was often teased about her involvement in environmental education by the colleagues in her school. The fourth team member was Anne, whose love of art ensured that arts-based learning was central to her grade five French immersion class. She articulated a desire to integrate her love of and training in art with learning in the school's extensive naturalized garden, which she had helped to establish fifteen years earlier.

In addition to their desire to learn more about integrations of art and environmental learning, what these teacher-researchers did share across their school sites was a lack of support for their curricular interests amongst the colleagues at their schools⁹. While each had one or two teachers at their school who shared an interest in environmental education, they were often ignored or derided by fellow teachers for their own interests in this area. Karen described her situation on this front by saying '...at school they're always teasing me for bringing in more earth stuff, tying it somehow into the assembly that will affect the whole school, the messages. And last year they were starting to call me the Earth Mother and all these other things.' Despite this lack of collegial support, each of the teacher-researchers were dedicated life-long learners, and eager to continue their professional learning so as give them new ideas to broaden and deepen their teaching about the environmental with their students.

The teacher-researchers planned and implemented eco-art lessons in their own classrooms, observed the effects on their students, shared these results with the team, and analyzed their experiences and reflected on them individually and collectively. Their collaborations came primarily through five team meetings that provided an opportunity to summarize and analyze their lessons as well as brainstorm new ones together. They took their commitment to the collaborative nature of the inquiry so deeply that three of the teachers involved their students as active participants in the journey by asking them to help investigate the study's key questions alongside them as the year unfolded.

Findings

The study's findings demonstrated what eco-art education can look like in elementary classrooms, as together the teacher-researchers designed and delivered over fifty eco-art lessons (a resounding number over the course of nine months given that they were responsible for teaching all parts of the curriculum, not just art.) The lessons utilized a wide array of materials and techniques, ranged in complexity and depth, and supported a variety of environmental education concepts, from explorations of place to investigating ecosystems, to addressing human impacts. (For an overview of a sampling of these lessons, see fig. 1). The data analysis identified commonalities in the teacher-researchers' approaches to the types of alignment made to environmental learning, in the structure and pedagogy used for eco-art lessons, and the challenges and barriers to this type of learning.

Table 1.

Sampling of Eco-Art Lessons

Approach	Type of Lesson	Art Education Concepts	Environmental Education Concepts
<i>Learning in the environment: nature as site for art-making and/or exhibiting art</i>	Ice sculptures	Sculpting, shape	Sense of place
	Waterfront eco-art designs	Installation design	Ecosystems thinking
	Bark rubbings	Drawing, texture	Sense of place
	Natural sculptures	Sculpting, composition	Sense of place
	Butterfly relief sculptures	Clay modelling, shape	Ecosystems thinking
<i>Learning about the environment: nature as subject for art</i>	Clay insect homes	Clay modelling	Sense of place
	Eco-Art exhibition	Exhibit & touring techniques	Ecosystems thinking
	Leaf and tree drawings	Drawing, line, shape, shading	Sense of place
	Landscape drawings	Drawing, line, perspective	Ecosystems thinking
	Rainforest batiks	Drawing, colour, line, shape	Human impacts
<i>art created with natural materials</i>	Community mural	Drawing, colour, line, shape	Sense of place
	Transparent ground drawings	Drawing, painting, colour	Sense of place
	'Take 30' photographs	Drawing, line	Sense of place
	Nature quilt	Composition	Human impacts
	Natural dyeing	Collage	Sense of place
<i>art created with the 3Rs</i>	Seed and sand drawings	Dyeing, colour	Human impacts
	Potato print frames	Collage	Human impacts
	Edible veggie sculptures	Printmaking, shape	Human impacts
	Junk art sculptures and masks	Composition	Sense of place
	Urban/rural drum collages	Sculpting, form	Human impacts
	Papermaking	Collage	Human impacts
	Scarecrow sculptures	Papermaking, drawing Sculpting, form	Human impacts

Table 1. cont.

Learning for the environment: <i>viewing and critiquing eco-art art as activism</i>	Andy Goldsworthy	Art history/criticism	Sense of place
	Emily Carr	Art history/criticism	Human impacts
	Brian Jungen	Art history/criticism	Human impacts
	Art gardens, Harbourfront	Art history/criticism	Sense of place
	Giant grapevine	Weaving	Human impacts
	basket/fence	Weaving, colour	Human impacts
	God's eye garden	Video production	Human impacts
	sculptures	Drawing, printing	Human impacts
	'Solution to Pollution'	Drawing, printing	Human impacts
	video	Sculpting and planting	Ecosystems-thinking
	Earth day posters		
Wish scrolls			
Pioneer art garden			

Over the course of the year, the team capably demonstrated that eco-art education could be used to support learning about environmental concepts and issues while simultaneously providing innovative art lessons for their students. The lessons aligned to environmental learning in two ways; firstly by connecting to their school board's key concepts in environmental literacy (connecting to a sense of place, developing ecosystem-thinking, and understanding human impacts) that were discussed as part of the research team meetings and the Ecoschools program to which their schools belonged. But they could also be aligned with the more common approach of learning in, about and for the environment (Palmer, 1998), a guiding trilogy often found in the development of environment education lessons.

The eco-art lessons that aligned with learning in the environment took students outside the classroom to draw, sculpt and exhibit in locales outside of the classroom. This is an unusual practice for art lessons, as many teachers deem it too unwieldy to move students, art materials and tools outside to work. Some of the art components of these lessons were brief, like the bark rubbings that were done as a larger unit on tree study; but others required research, advance preparation and collaboration, like the tree baskets that Anne's class made (see illustration 2) or the eco-art exhibition and performances in the butterfly garden at Dorie's school (see illustration 3).

Those lessons that aligned with learning about the environment often took more traditional forms as most were made inside the classroom (accommodating the need to work inside in the cold Canadian climate), and therefore involved more common art-making techniques. Yet they still involved nature as the subject for art-making (found in the rainforest batiks of Anne's class, or the community mural created by Astrid's school (see illustration 4). They also manifested in art made with either natural materials or found objects, allowing the teacher-researchers to reinforce sense of place connections or concepts of human impacts (such as the 3Rs); Dorie's edible veggie sculptures were one such example, as were Karen's junk art masks.

The examples of eco-art lessons that fell into the learning for the environment category could be divided into two types: one was learning about artists who engaged in their own forms of environmental activism (such as Andy Goldsworthy or Brian Jungen), and the second was students' attempts at their own artistic forms of activism to address local environmental issues. For example, Anne's class installed God's Eye sculptures and a giant grapevine basket in their school garden, both forms of aesthetic stewardship aimed at

protecting heavily trampled parts of the garden. In contrast, Karen's primary students created a cross-curricular activist video, which Karen described in her journal:

...students were engaged in the preplanning, writing and dramatization of an integrated news type show about the environment, entitled 'The Solution to Pollution: A Child's Perspective'. It included sections on littering, vermicomposting, the Boomerang Lunch, books with environmental messages, an interview with a child who had just returned from Costa Rica about the rainforest, an eco-art show, an interview with a senior citizen about how life was different as an 8 year old, eighty years ago (imagine no plastic and no jeans!), poetry reading and lip-synching a song with a strong environmental message.

Its production integrated all aspects of the curriculum, and became the focus of learning in the classroom over a number of weeks. It was played for the school community at an Open House, alongside eco-arts activity centers (including weaving, sculpting, drumming, reading and paper-making) run by the students themselves.

Many of the lessons focused on nature as the source of materials, images or sites for art-making, illustrating the strong value placed by the teachers on the natural world as a way into environmental learning with their students. They built on the innate curiosity that many elementary students have for the natural world as a common thread between the visual arts and environmental education: this was achieved through observations of nature, the incorporation of natural materials, processes and/or imagery, and the development of students' physical and affective connections to local places. Developing a sense of place was considered a major tenet of environmental education in their school board¹⁰, but they also had personal beliefs informing their impetus for taking this approach. Anne said:

I think sense of place is another really important part of that whole definition of eco-art... just in terms of getting the kids to really respect and appreciate the neighborhood and the environment that's closest to them... if through your teaching you can help kids to develop the real sense that 'this is where I belong', that 'this means so much to me that I will never do anything to destroy it'.

Anne was realistic about the effects of this: *'I'm not sure if this awareness will translate into a life-long sensibility to environmental issues, but it sure is a great start! They are very attached to this [garden] space'.*

When analyzed as a whole, the findings did address the question of the curricular content and structure of eco-art lessons in elementary settings. The structure of eco-art lessons proved similar to general art lessons, making it comfortable for these generalist elementary teachers to implement without special training: some were tightly structured with defined beginnings and endings, while others were more open-ended; some focused more on process, while others were more product-oriented. At times there was a greater acceptance of ephemerality in the art-making process than is the norm in most classrooms, placing less emphasis on the traditional 'make and take' approach and more on the use of biodegradable materials (like vegetables, grapevine or leaves) and natural processes (like freezing or decomposition). Also evident was the intentional inclusion of collaborative modes of art-making, involving small teams or the class as a whole in creative eco-action (such as found in the primary video). This varied the structure of eco-art lessons beyond those dictated by modernist approaches to art education towards postmodern ones that

were more dialogic, collaborative and community-oriented, as recommended by Gablik (1991).

While some of the pedagogy of eco-art learning was similar to general art lessons at the elementary level (like experiential learning and viewing artists' work), there were important distinctions as well: the teacher-researchers used outdoors learning more often, as well as incorporating cross-curricular integration more clearly than is typical in elementary art lessons. Making explicit links to environmental learning was also distinctive; this was achieved by integrating various approaches to learning in, about and for the environment into their lessons; by modeling the 3Rs; and by highlighting environmental concepts (like ecosystems-thinking and human impacts) as part of their art lessons. As these same pedagogical strategies are found in environmental education and outdoor education, these teachers showed that the pedagogy of eco-art education can balance the needs of art-based learning with that of the environment, rather than subverting one over another.

There is no doubt that the teachers' definitions of eco-art influenced their classroom practice. The team agreed that while eco-art education was defined in part by the materials and techniques used (showing sensitivity to biodegradability, recyclability and use of the 3Rs), what was more important was the inclusion of themes or concepts that raise awareness of humans' relationships with and/or impact on the earth. Many of the lessons used nature as the source of materials, images or sites for art-making, illustrating the strong value placed by the teachers on the natural world as a way into environmental learning with their students. A few took their lead from their students in this: for example, Karen's primary students were adamant in their linking of eco-art to the natural world. In her research journal she reflected that 'my students seem to have translated our year's integrated studies into 'most eco-art means no glue, no tape, no adhesives, little impact on the earth, [and] minimum consumerism'. But she also acknowledged that there was an underlying philosophy that summarized her own emerging definition of eco-art:

...eco art is all art that conveys a respect for the earth, for our natural environment, the interconnectedness of our eco systems, and the importance of ecological literacy... I think the bottom line for me was always respect. And the kids got that very strong message — respect for self, respect for others, respect for community, respect for the world, respect for everything in it.

These perspectives on eco-art education brought by the teacher-researchers into the study raised more questions: does eco-art have to be made of environmentally friendly materials? Does using found or reclaimed objects fall into this category? Does eco-art have to demonstrate a connection to the natural world? And is it eco-art if no message is apparent, but the materials are eco-friendly? Astrid demonstrated that she was struggling with similar questions about materials in her journal:

...in the EcoClub, I had all these pine cones and leaves from when my Grade 1s collected them. So we took cardboard that was in a recycling bin and they put sand on it and they glued these things to it. And they made art and they took it home and they were all excited about it. But a couple of the artworks stayed at school and I'm thinking what am I going to do with this now? You know, we just made more garbage in a way.

All of the team wrestled with this issue over the course of the year: how do we continue to make art with children in a world struggling under the weight of its own refuse, when we

know that those artworks will likely end up in landfill one day? One way that this contentious issue was addressed was by experimenting with biodegradable materials and natural processes in art-making; another was through an ongoing discussion about whether eco-art should contain a message to rationalize its existence. If eco-art helped to make the world a better place, could we justify the place of product-based art projects in schools? Karen raised this issue in her journal, noting in her journal that eco-art can be used

...outside the classroom to engage other people and give a very strong political environmental message. And that's really how I interpret eco-art although it's still something I'm trying to figure out, what makes eco-art different than art based on nature. But this way, it's engaging other people which art does, but it's got more of a kick to it, and...more of a message... All art is supposed to have a message. But you know what I'm trying to say? Like kind of a slap in the face almost, like what are we doing to this land, what are we doing to our earth? That's kind of how I look at a lot of eco-art.

Through the curriculum development process and the data analysis, the advantages of eco-art education were also identified. One was the excitement it generated in students, seen in their expressions of delight at the start of lessons, a high degree of engagement during the lessons, and positive feedback at the end. There was also a recognition by the team that eco-art had an ability to strengthen students' connections with place, sharing the perspective of many environmental educators who have seen the benefits of better connecting children to their local places (Thomashow, 1995; Sanger, 1997; Smith, 2002; Sobel, 2004). They also liked the ease with which they were able to link it to other parts of the curriculum: integrations with science, social studies, and language arts were seen frequently. And the team was quick to point out its practical advantage: by reducing their consumption of traditional art materials, they could save money in their classroom budget for other things.

The challenges of eco-art education were also identified; some of these were not particular to eco-art, such as dealing with student behavior and an insufficient amount of class time to follow through with activities to their fullest, both encountered in any subject area. A few of the teachers found that some eco-art lessons took more time than usual to prepare for (citing clay work and papermaking as examples), or needed an extra set of adult hands to facilitate (like batik). The weather was another challenge, as its unpredictability required a greater degree of flexibility when working outside. While these challenges didn't stop any lessons from proceeding, it did mean that the teacher-researchers sometimes had to show a greater resolve and ingenuity to move ahead with what they envisioned. At the outset, all of the team was in agreement that the advantages of eco-art education far out-weighed its challenges, and that there were no barriers to its implementation.

Conclusion

As the first study to examine eco-art learning in a sustained way across four school sites, this inquiry has made a contribution to the emerging knowledge and growing discourse of eco-art education, as well added new understandings to the roles of art-based learning in the more established field of environmental education. It has demonstrated that eco-art education can support learning in, about and through art education and environmental education simultaneously in elementary classrooms. It has resulted in the creation of a database of elementary eco-art lessons that exemplifies art-based, environmental learning and supports the emerging theoretical body of knowledge about eco-art education built over the past thirty years (McFee & Degge, 1977; Gablik, 1991; Blandy & Hoffman, 1993; Lankford, 1997; Graham, 2007). The database also provides a ready set of models for those

wishing to introduce eco-art learning to their students by exemplifying how to use eco-art learning to make connections to the natural world, support learning in other areas of the curriculum, and undertake place-based learning and age-appropriate activism. The roles of collaboration, place-based learning, and activism in eco-art learning have been demonstrated, as have the use of biodegradable materials and natural processes in making art with children. Equally important, the design and delivery of eco-art lessons has proven similar enough to general art lessons that elementary teachers can undertake eco-art learning with their students without specialized inservice training, crucial to the widespread implementation of eco-art education in future. In this, eco-art education should be expanded into more elementary settings in future, helping teachers to implement art-based and environmental learning in an integrated way, and broadening the science-based approaches to environmental education more commonly found in classrooms (Sauvé, 1998; Palmer, 1998; Gurevitz, 2000).

The study also identified areas where practitioners of eco-art education need to more carefully consider its emerging directions. One is the heavily nature-centric approach that was evident in many of the eco-art lessons in the study. While connecting with the natural world has been advocated by many art educators in recent years (Anderson, 2000; Blandy & Cowan, 1997; Holmes, 2002) what was missing was considering the built environments in each of the school communities as a source of environmental learning, as advocated by McFee & Degge (1977) and Adams (1991). Broadening eco-art practice to include this would better meet the needs of students who live in urban environments.

As this inquiry focused on the experiences of the teachers, there was little focus on tracking the attitudinal or behavioural shifts of students; certainly an important next step is to explore students' experiences with eco-art education. What characterizes their experiences, and what is their effect on environmental literacy and/or eco-friendly behaviors?¹¹ Other questions resulting from the study center on the materiality of teaching eco-art education: how can teachers be convinced to decrease their reliance on plastic markers and bleached paper to reduce the ecological footprint of their art programs? And how can they ensure 'a deeper shade of green' (Selby, 2000, p. 89) in their art lessons when they have little background in environmental education themselves? These are complex questions that will require multiple studies to address, yet are necessary to more fully understand the design and delivery of eco-art learning in elementary classrooms.

On a personal level the study was a deeply gratifying experience for all on the team: working together on a collaborative action research project helped to inspire the teacher-researchers to take on new initiatives in their own schools the following year. Dorie not only expanded the eco-art exhibit at her school, but took on new leadership roles by sharing her knowledge with students in summer camps and preservice education. Karen and Anne initiated new Eco-clubs at their schools, and Astrid was inspired to start a website to encourage knowledge-sharing with her fellow teachers. Karen nicely articulated the effects of her involvement in the study:

Being a part of this team empowered me to take more leadership at work, to reach out more to like-minded families at school to help educate others about the importance of integrating ecological literacy in all that we do. This enlarged the circle and in turn empowered other children and parents to have a stronger voice and sense of ownership [in environmental education].

I felt a similar effect as I was able to integrate my roles as researcher, educator, environmentalist and artist into the praxis of eco-art education. I gained invaluable

experience in curriculum development alongside a group of enthusiastic and dedicated teacher-researchers who shared my belief in the value of integrating art and environmental education; together we created a rich collection of lessons, developed insights into the content and pedagogy of eco-art education, and better understood where our learning in this field needs to go next. Through workshops, lectures, writing and continued research, we plan to share this learning with others in hopes of growing eco-art education and inspiring students and teachers to experiment with this form of artistic activism in their own learning environments in future.



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Notes

¹I use the term 'eco-art' to encompass both environmental and ecological art, taking my lead from Matilsky (1992). She proposed that 'environmental art' be used to designate works that call attention to nature and establish 'a reverent relationship between the viewer and the earth' (p. 37). In contrast, 'ecological art' embodies more of an activist stance, not only raising awareness of ecosystems but also proposing or creating solutions to their human-induced challenges.

²For a fuller cataloguing of artists working with environmental themes or foci in their work, refer to the database of artists on Green Museum [<http://greenmuseum.org>].

³For a fuller discussion of these scholars' contributions to the discourse on eco-art education, refer to Inwood (2008, 2009).

⁴Gablik is one of the first in the 20th century to articulate a need to move towards a more collaborative, community-oriented form of art-making, in which the 'paradigm of social conscience replaces that of the individual genius' (1991, p.114). She calls for art to move beyond 'nonrelational, noninteractive, nonparticipatory' aesthetics of Modernism towards 'connective aesthetics', that is art that builds community, engages with the reality of contemporary issues, and 'speaks to the power of connectedness and establishes bonds, art that calls us into relationship' (1991, p.114).

⁵Herr and Anderson (2005) noted the inherent tension that can arise in this type of situation, stemming from between the dualities of practical/formal knowledge and the insider/outsider status of the research team.

⁶Arts-informed research is a family of approaches to inquiry that bring together 'the systematic and rigorous qualities of conventional qualitative inquiry with the artistic, disciplined, and imaginative qualities of the arts' (Cole and Knowles, 2008, p. 59). Exploring new means of conceiving meaning-making and knowledge creation is central to arts-informed research, as traditional modes of research offer limited means for investigating and understanding arts-based learning. Eisner (1997) has identified the potential benefits that arts-based educational research can offer, and believes that it forces a re-examination of the assumptions and values that underlie social science-based research, many of which run counter to the ways the arts are involved in education. By better integrating the arts into a new paradigm of research, art educators are offered a better means to 'fit their interests, [be] congruent with what they wish to study, and play to their strengths' (p. 265).

⁷For a fuller introduction to this program, please refer to the TDSB's Ecoschools website at: http://www.tdsb.on.ca/_site/ViewItem.asp?siteid=207&menuid=1425&pageid=1052

⁸As a means of recognizing their contributions to the development process and this research project, the teacher-researchers agreed that their real names should be used in this article.

⁹It should be noted that the local school board, the TDSB, did have a growing Ecoschools program in effect at the time of the study, but with a small team of leaders supporting over 600 schools in the board and limited release time for bringing teachers together, it was hard for teachers in individual (and often geographically dispersed) schools to identify and/or connect with others who shared their interest in environmental education.

¹⁰The three tenets of environmental education, used by the Toronto District School Board (2007) at that time to inform curriculum development and classroom practice were sense of place, ecosystems thinking, and human impacts. Due to a change in provincial policy in 2009, they now use the categories of learning in, about and for the environment more commonly.

¹¹While not the focus of this study, there are indications that the students might have improved their environmental literacy as part of their eco-art lessons. While viewing the gr. 2/3 students' 'Solution to Pollution' video might be sufficient evidence for this assertion in and of itself, Anne reinforced this in a reflection on her students' work on eco-art installations for the waterfront:

...you sort of hope that they grow in many ways, but to see that kind of very observable growth in terms of their understanding about the environment, about art, and its implications on the environment and so on...that's been very exciting.

Further study is required to more fully investigate and understand the effects of student learning in eco-art education and its impact on students' environmental literacy.

Çevre eğitiminde sanatsal yaklaşımlar geliştirmek: İlköğretim sınıflarında eko-sanat eğitimini keşfetmek

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Özet

Bu makale çevre bilincini ve sorumluluğunu arttıran bir araç olarak sanat ve çevre eğitiminin entegrasyonunu amaçlayan eko-sanat programının geliştirilmesini amaçlamaktadır. Bu nitel araştırmada öğretmenlerin ilköğretim sınıflarında eko-sanat eğitiminin tasarım ve uygulamasına yönelik deneyimleri rapor edilmiştir. Bir grup öğretmen işbirlikli eylem araştırması çerçevesi rehberliğinde uygulama, teorik bilginin planlanması, gözlemlene ve buradan elde edilen bilginin eko-sanat müfredat ve pedagojiye yansıtılması için çalışmışlardır. Çok sayıda okul arasında sürdürülür bir şekilde eko-sanat eğitimi incelemek için yapılan ilk araştırmada, ortaya çıkan bilgi birikimi ve sayısı artan eko-sanat eğitimi çalışmaları sanat tabanlı eğitimin ilköğretim düzeyinde pedagoji ile çevre eğitimi kavramlarının nasıl uyum içerisinde birbirini desteklediğini göstermektedir.

Anahtar Kelimeler: Çevre eğitimi, sanat temelli, çevresel sanat, artistik eylemcilik, eko-sanat eğitimi

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