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Building bridges, not walls: exploring the environmental education ecosystem

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If you are reading this, there is a strong chance you care about making the world a better place. As academics in higher education, nonprofit professionals, and global citizens, we, too, care about the urgent, interconnected issues facing people and the planet. For more than four decades, we have worked in the environmental, sustainability, arts, evaluation, and education spaces and, among us, have done so in formal, nonformal, and informal settings. Moreover, in addition to the varied identities that we bring to our work, we recognize ourselves as environmental education (EE) professionals, agreeing with Monroe et al. (2008) who say that EE is a philosophy, approach, tool, and profession. Strengthening this profession through enhancing its efficacy, relevance, and ability to make change in the world requires augmenting connections with related professions and disciplines, for the benefit of all.

How is environmental education defined?

With roots as early as the 1890s, EE emerged from nature study, outdoor education, and conservation education, becoming a separate field over time (Disinger, 2001). Distinct from its predecessors, which are characterized by more disciplinary or context specificity, EE is inherently inter- and trans-disciplinary, grounded in a systems-thinking approach, including consideration of the socio-historical, political, economic, and ecological aspects of human/environment interactions, and distinctly oriented with an eye toward practice. University of Michigan professor Dr. Bill Stapp wrote, ‘EE is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution’ (Stapp, 1969, p.30).

In 1975, a UN-convened international panel highlighted EE's holistic nature, stating that it should be 'an integral part of the educational process, aimed at practical problems of an interdisciplinary character, build a sense of values, and contribute to public well-being.' This global group said the focus should reside mainly in the initiative of the learners, their involvement in action, and guided by both the immediate and future subjects of concern (UNESCO-UNEP, 1975, p.3).

The more formal, and now best-known, instantiation of EE derives from the 1977 Tbilisi Declaration, the outcome of an influential meeting hosted by UNESCO and the United Nations Environment Programme, held in Tbilisi, Georgia in the former USSR. Involving more than 265 delegates representing 66 member states, as well as other organizations and agencies from around the world, the Tbilisi Declaration marked the first time that the global community developed a consensus definition of environmental education, helping create the field as we know it today. The Tbilisi Declaration described EE as a 'process aimed at developing a world population that is aware of and concerned about the total environment and its associated problems, and [that] has the attitudes, motivations, knowledge, commitment, and skills to work individually and collectively toward solutions of current problems and the prevention of new ones' (UNESCO, 1978, p.2).

What is foundational to environmental education?

EE shares many interests, attributes, and values with adjacent fields and professions, and, for that reason among others, environmental educators often work in a variety of fields (Ardoin et al., 2016). Moreover, leading

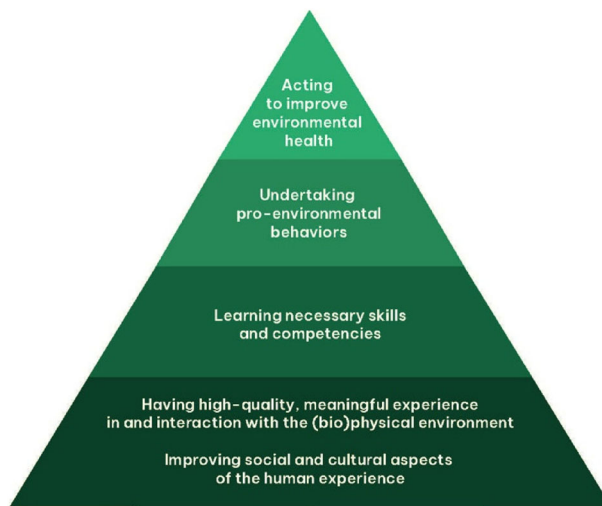


Figure 1. Core outcomes in environmental education: building on a foundation.

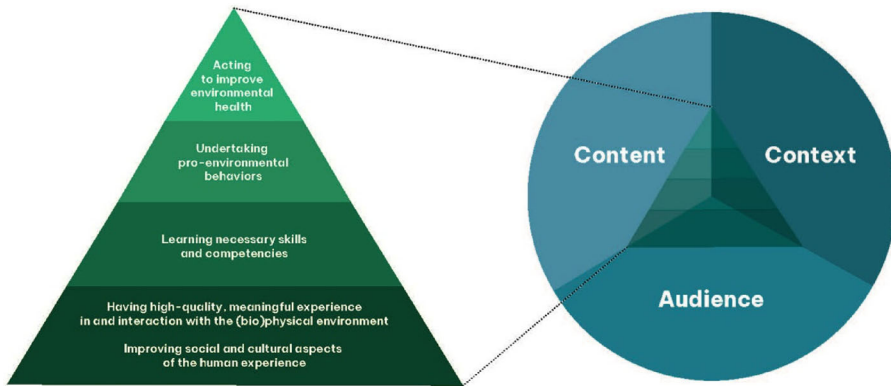


Figure 2. Content, context, and audience.

professional organizations in the field have been interested in maximizing impact and streamlining efforts through creating more deliberate, effective collaborations.

With those goals in mind, the North American Association for Environmental Education (NAAEE), a key backbone organization in EE for more than a half-century, commissioned a study to explore what is core to the EE field in terms of definitional aspects as well as outcomes, and what elements exemplify programs and initiatives within it. This undertaking also explored the connections between EE and related areas, such as sustainability education and environmental justice, among others. Through a three-phased Delphi process, researchers from The Ohio State University, Stanford University, and Duke University engaged 44 leaders in EE, from scholarly as well as practice-oriented perspectives, in iterative deliberations over the course of two years. (See Clark et al., 2020, for details.)

That process produced an encapsulating statement describing the core purpose of EE, derived from combining and achieving consensus among the participating leaders: *Environmental education works to move people to action for the tangible benefit of the environment and humanity. To realize these benefits, people must connect experientially with the environment, learn needed skills, and understand the complicated social and cultural connections between humanity and the natural environment.*

The process also guided the participants to articulate outcomes of EE. The authors distilled five, two of which are foundational and three of which build on the others (see Figure 1).

Rather than being exclusive from one another, the five are intertwined, each intimately connected with the other. At the foundational level, EE is intended to (1) provide high-quality, meaningful experience in and interaction with the (bio)physical environment, and (2) improve social and cultural aspects of the human experience. Building on those pillars, EE

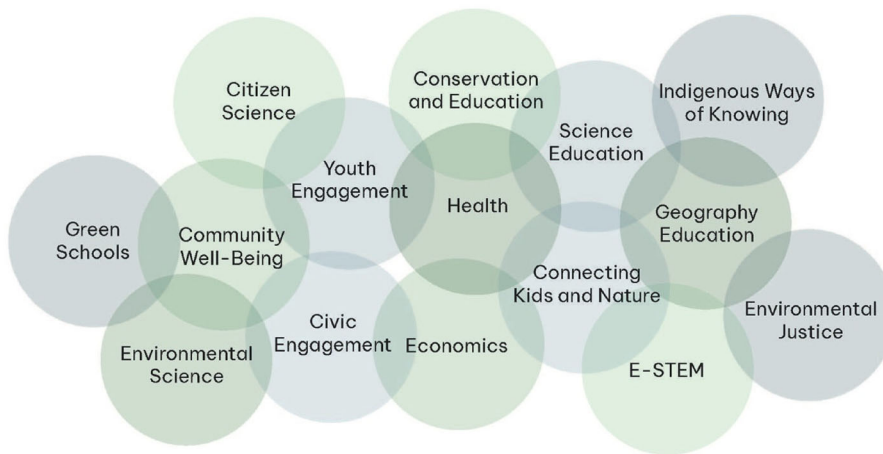


Figure 3. The environmental education ecosystem.

provides participants with the opportunity to (3) learn necessary skills and competencies, (4) undertake pro-environmental behaviors (and change behaviors to be more environmentally friendly), and (5) act to improve and enhance the quality and health of the environment. To achieve these outcomes, a complex array of programs and approaches, offered in many contexts and for many audiences, comprise the EE ecosystem (Ardoin et al., 2018; Clark et al., 2020; Heimlich & Falk, 2009) (see Figure 2).

How is environmental education a tapestry?

Environmental education is situated within a broad, dynamic landscape. Therefore, considering how professionals and organizations in the EE field might collaborate for maximum impact is important, and considering the connections between EE and related fields is equally essential. Historically, disciplines and fields have worked to distinguish and define themselves (Bruyat & Julien, 2001; Echtner & Jamal, 1997; Mark, 2003; McBride et al., 2004; McLevey et al., 2018) and build and maintain distinct cultures and systems of not only how to work, but also how to learn (Marbach-Ad et al., 2019). Yet an increasing number of studies show that, through a range of mechanisms, effectiveness is enhanced when working in connected, rather than diffuse, ways (Boudreau et al., 2016; Fortunato et al., 2018; Guimera et al., 2005; Uzzi et al., 2013).

Many EE approaches and programs intersect with those from other domains – such as public health, K-12 education, urban planning, social justice, and more – and, therefore, collaborate when developing avenues for

social and environmental change, while still recognizing that there may be aspects of expertise and emphasis distinct to each field. This rich educational tapestry forms an ecosystem in which various fields, approaches, and adjacent disciplines share outcomes of interest.

The following descriptions provide a few concrete examples of how EE intersects with the work of other sectors, also noting areas of distinction (see [Figure 3](#)). These descriptions illustrate three types of intersections – related areas of education, approaches to learning, and related fields.

Environmental education and related areas of education

Education for sustainability and education for sustainable development

Environmental education is built on principles of sustainability, including using the power of education to create a more just and sustainable future. As a global community, we cannot achieve a healthier environment without also focusing on social equity and shared prosperity (Purvis et al., 2019). Education for Sustainability (EfS) focuses on those key elements of a sustainable future (Huckle, 1991). Many researchers and practitioners envision EE and EfS as being closely aligned, with EE providing the environmental gateway to sustainability. Education for Sustainable Development (ESD) is sometimes perceived as being broader than EE as it addresses not only the environment, but all social issues (Vare & Scott, 2007). The UN Sustainable Development Goals, for example, focus on poverty, hunger, human rights, climate change, and governance, among other areas of emphasis. Many practitioners and researchers in the field of EE also focus on how education can address these goals, citing the interconnected nature of environmental, social, and economic issues.

Science education

Both environmental science, and STEM (science, technology, engineering, and mathematics) education more broadly have an interest in helping people understand the processes of science, the role of science in society, and how science impacts policies designed to create a more sustainable future. Science is necessary to address environmental problems as scientific literacy skills are key to developing and implementing effective policies. STEM and environmental education share key outcomes of helping people understand the differences between facts and opinions, evaluating reliable sources, understanding and weighing risks, and more. EE plays a critical role in advancing high-quality science education by focusing on civic engagement, societal challenges, and other areas that connect science and society.

Environmental education and approaches to learning

Connecting to nature

Spending time in nature, often referred to as connecting (and reconnecting) people with nature, is known to bring a variety of mental and physical benefits to people of all ages (Chawla, 2020; Ives et al., 2017). As a result, connection to nature is a strategy often employed in promoting health and wellness. Many EE programs also emphasize connecting to nature, especially as it relates to helping people develop place attachments. As discussed, having meaningful experiences in/with the biophysical environment represents one foundational outcome of EE (see Figure 1). However, spending time in nature-rich settings does not, on its own, lead to the ultimate EE outcome described in the encapsulating statement: Moving people to action for the tangible benefit of the environment. When seeking environmentally related outcomes, providing conditions that support knowledge, skills, motivation, and (collective) action is essential (Ardoin et al., 2022). To do so requires intentionality, structures conducive to learning, and an environmentally literate community that is engaged in working on issues with shared meaning over time (Ardoin et al., 2020; Niemiec et al., 2017).

Community science

Community science and/or citizen science can be a pathway to helping understand the nature of science through participating in the scientific research process (McKinley et al., 2015). Yet, not all organizations or individuals working in community science have an end goal of creating a healthier environment. Some focus on helping participants understand the process of science or how to use data collected by non-scientists to address a range of societal issues, from neighborhood revitalization to community health. Others focus on multiple outcomes, including the role of community science as a tool for protecting the environment and enhancing environmental learning. For example, a number of community science initiatives focus on protecting endangered species or habitats, or addressing specific issues, such as creating enhanced conditions for soil-stabilizing vegetation (Ardoin et al., 2020; McKinley et al., 2015).

Experiential and project-based learning

Many environmental education programs and initiatives are based on an experiential learning model that builds on the work of educational researchers and psychologists including, but not limited to, Dewey (1938), Lewin (1947a, 1947b), Kolb (1984), and Piaget (see Gruber & Voneche, 1977), among others. The experiential learning cycle comes in a number of varieties, but the core notion emphasizes several key elements:

learning by doing and active engagement in an experience, reflecting on that experience, processing that experience, and applying the reflected learning in the future. Many in the EE community apply experiential teaching-and-learning strategies with the belief that such approaches, which are learner-centered, are more likely to be relevant and memorable. EE also often draws on project-based learning approaches, emphasizing ground-up, situated, holistic experiences as the gold standard. In the field of EE, however, the core focus is on environmental outcomes, while in experiential and project-based learning, the emphasis is on the approaches themselves, pursuing the approach across all learning – from environment to mathematics to creative play and social justice.

Environmental education and related fields

Environmental justice

EE is deeply intertwined with outcomes and interests of environmental justice, which focuses on working for the ‘fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies’ (EPA, n.d.). Collectively, environmental educators work for a more just, sustainable future through supporting people in becoming better advocates to create healthier communities and a healthier environment. EE can help develop the necessary knowledge and skills to take action on toxic waste dumps, climate change, lead-contaminated water, air pollution, and numerous other environmental threats that often disproportionately impact poor communities and underserved audiences who may not have the resources, leverage, or social capital to address these challenges (Gould et al., 2018; Taylor, 2007). Both EE and environmental justice (EJ) focus on creating positive community-based change. EJ often takes an advocacy orientation, which is essential in moving society toward social justice and equal protection, as well as to end institutional racism (Bullard, 1996; Walker, 2012), while EE strives to be nonpartisan, focusing on learning, building competencies, and promoting behaviors needed to become active citizens, without advocating for specific legislation. (NAAEE, for example, advocates for enhancing EE as well as more equitable, inclusive climate change education and access to nature, but does not take a stand on legislation related to specific environmental issues.) Environmental educators help prepare people to take an active citizenship role, working to ensure that community members learn with and from colleagues in the environmental justice arena. As one colleague said, ‘Our collective goals are the same, asking: “How can we best work together, so that some people are not disproportionately affected by environmental

degradation?" Environmental educators and environmental justice advocates need to work together and play to their strengths and create a more just future for all' (NAAEE conference attendee, personal communication, October 9, 2018).

Action civics

Environmental education has the goal of helping people become more active in civic life – from voting to serving on boards to organizing online. Action civics aims to develop participants' civic skills, knowledge, and dispositions and builds on more traditional forms of civic education that primarily focus on providing people with content knowledge about citizens' rights and responsibilities. Linked closely with areas often taught through social studies courses, both EE and action civics share the goal of creating more civically engaged individuals and communities. EE and action civics are both working to build long-term civic engagement by ensuring that all learners, especially those from traditionally under-resourced communities, have a chance to engage in civic life. The ultimate goal is to help create a more responsive government that takes people and the planet into account as we create and implement policies.

These are just a few examples of how EE intersects with other disciplines, approaches, and subsets of the broader education, conservation, and social justice fields. Moreover, within EE itself, many overlapping areas of expertise and interest exist, from a focus on climate to oceans to biodiversity and more. Discussion of these lenses is intended to foster consideration of how various communities might better communicate and collaborate with the recognition that, at the core, the purpose is to envision and create a thriving future for all.

How might we strengthen our collaborative work?

Returning to the Delphi study, which surfaced discussion of many related areas of work and interest, the findings encouraged consideration of avenues to more effective collaboration across the diverse EE landscape. Focusing on strengthening the ecosystem of ideas and talent, the analogy of building bridges arises as a way of viewing and enhancing intersections. Imagine standing on a riverbank and gazing out toward a bridge that spans to the other bank. The bridge is shared between the two differentiated banks. The bridge allows you to circumvent what divides you, which is the river. The bridge then becomes an alternative vantage point from which the river is seen as uniting, rather than dividing, the two banks.

How might this concept play out? One way to strengthen collaborative work is to join professional associations at the local, regional, national, and

global scales as professional organizations often partner on issues of joint interest in areas of policy and practice, providing opportunities to build and strengthen leadership skills such as networking and relationship building. The Global Environmental Education Partnership (GEEP), for example, works worldwide with individual researchers and practitioners, as well as organizations and policymakers, to share resources and enhance cooperation to strengthen EE and build a more sustainable future. Through conferences, case studies, and a Global Environmental Education Think Tank, the GEEP convenes professionals across regions and generations by focusing on shared sustainability goals. An ongoing partnership between the Children and Nature Network (C&NN) and NAAEE provides another example of how a shared focus – in this instance, on the core principle of connecting people to nature (see [Figure 1](#), Clark et al., 2020) – can result in a number of productive initiatives, such as developing a joint research library focused on environmental education.

From the perspective of fields coming together around a core societal interest, the EE and civic education communities have been enhancing shared efforts over the past five years. With leadership from the Kettering Foundation, a nonprofit organization focused on making democracy workable, a number of efforts have been undertaken to examine the intersections between EE and civic engagement. The Kettering Foundation conducts research from the perspective of citizens, emphasizing what people can do collectively to address problems affecting their lives, communities, and nation. Building on this historical grounding in a solutions-oriented space, they have joined forces with partners in the EE field to address how the civic engagement and EE communities can learn from each other and pursue joint initiatives to better integrate civics into EE, and vice versa. The result is an ongoing community of practice that includes environmental and civic educators who co-develop efforts that bridge EE and civics in ways that lift both fields.

Collaborations such as these demonstrate the importance of shared work toward healthier, more livable communities. They emphasize research-based approaches to environmental conservation that achieves co-benefits, which are good for society and the planet more broadly.

Looking to the future: how might we build ‘better’ bridges?

Working across organizational and disciplinary boundaries is not always easy, nor is it always the answer. At times, working independently – within disciplinary or organizational bounds – is necessary because of a specific expertise, intention, goal, or opportunity. But recognizing and leveraging the connections among fields can have powerful results: by working across

boundaries strategically and celebrating the work of colleagues who share approaches and interests, we are more likely to achieve goals related to impact and societal transformation.

EE is transdisciplinary by nature – a characteristic that has always pushed the field to work broadly. Given the many networking tools in today’s connected world, it is exciting to consider how to achieve more by leveraging collective efforts. If we continue to think about EE as an ecosystem, we have the opportunity, and indeed likelihood, to do more, learn more, and accomplish more on the road to creating a more sustainable, equitable future for all.

Disclosure statement

No potential conflict of interest was reported by the authors.

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