

Understanding How an Environmental Educator Identifies and Thinks about Environmental Issues in Their Education Programming

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ABSTRACT

Environmental educators work directly with students and their teachers to implement environmental education programs in both in-school and out-of-school settings. However, the literature is limited in focusing on these environmental educators' thinking and teaching perspectives on environmental issues. This narrative inquiry focuses on an educator (Greta – pseudonym) from a local environmental education center to understand the ways in which she thinks about and identifies the relevance of environmental issues, utilizing in-school and out-of-school settings. Our findings indicate that Greta thinks about environmental issues using her past and current experiences. Greta uses a more local and personalized approach with students, utilizing social and cultural aspects to identify the relevance of environmental issues. This study contributes to research exploring environmental educators' thinking about environmental issues and their different teaching perspectives when interacting with students and when teaching environmental education content in out-of-school and in-school contexts. This study has implications for both practice and future research in environmental issues.

Keywords: environmental issues, relevance of environmental issues, environmental educators, thinking, experiences, education programs

Key Abbreviations: Environmental Education (EE), Environmental Education Center (EEC)

Introduction

Communities around the globe are being directly and indirectly affected by environmental issues (e.g., deforestation, rising sea levels, biodiversity loss, plastic pollution). Scientists and policymakers have warned us about these environmental issues for years (Kelani, 2015; Klein, 2015). These problems are dangerously impacting and threatening the existence of the ecosystem(s) around us. Bigelow and Swinchart (2014) argued that we live in a world where we cannot separate ourselves from the environment. As a society, we are all connected and share a common planet. Harper and Snowden's (2017) book highlights human connections to environmental issues as a primary topic for people interested in teaching and learning about environmental issues. Their chapters aim to give readers a snapshot of how these human connections are made between different fields. To achieve equilibrium in our society, where natural resources and human impacts are balanced, we need to build a sustainable future for ourselves, especially by focusing on educating people about environmental issues.

Environmental educators are at the forefront of teaching students about the environment and environmental issues (Malik et al., 2024a). The work we present in this paper highlights the importance of understanding how environmental educators think about and identify environmental issues in their teaching. Environmental educators are perceived as science content experts by both students and teachers (Stronach et al., 2026). These educators are actively involved with students in various in- and out-of-school programs throughout the year. These different teaching and learning contexts (in-school vs. out-of-school) demand careful consideration by the environmental educator regarding the teaching strategies needed to help students (and teachers) learn environmental science concepts (Hesson & Roth, 2024). For this research study, we were specifically interested in learning how these educators present environmental issues in their programs and their underlying thinking related to environmental issues. We hope our findings will help school administrators, teachers, environmental education team members, and science teacher educators/researchers better understand environmental educators' perspectives on environmental issues and the support they need to be productive and effective in their teaching experiences.

Seminal works by Corcoran (1999), Palmer (1993), and Tanner (1980) provide an essential foundation for environmental educators' overall experiences and understanding. For example, Corcoran (1999) noted various influences that significantly affect and inform the lived experiences of environmental educators in the United States. They focused on unpacking environmental educators' narratives and their experiences. However, these studies do not provide evidence of how environmental educators think about and present environmental issues in their programs, across both in- and out-of-school settings. Exploring this area has been called for in recent research (Rennie, 2014; Stronach et al., 2026).

It is important to note that the *International Handbook of Research on Environmental Education* (Stevenson et al., 2013) includes 51 chapters on environmental education research. Some of these chapters have environmental educators' perspectives embedded in their content. However, there is no single chapter focused solely on environmental educators. Having said that, we would like to note that all the chapters in this handbook are crucial and offer valuable insights into environmental education research. What the field needs, though, are more in-depth accounts of the pedagogical decisions made by environmental educators when teaching science to students in both in-school and out-of-school settings.

Environmental educators are directly responsible for enhancing students' understanding and knowledge about environmental issues (Malik et al., 2025). There is a need to engage the public in experiences that make them more literate about scientific knowledge and understanding (American Association for the Advancement of Science, 2022). We believe that one way to enhance the public's scientific knowledge and understanding is through education, which takes place in both in-school and out-of-school settings. In this study, we focus on identifying environmental educators as critical community members tasked to teach our students, teachers, and the general public about environmental issues. Their work is of tremendous importance for the health and well-being of our communities. These educators utilize both in-school and out-of-school settings for their programs. This research study highlights environmental educators' perspectives to unpack how they think about environmental issues and identify their relevance when teaching in various contexts.

Environmental Education (EE) is a challenging field within science education due to its interdisciplinary nature. The goal or objective is not easily visible as it is intertwined mainly with social and cultural aspects (Dillon & Herman, 2023). Environmental issues, by nature, are related to a society's social and cultural perspective. For example, the water crisis in Flint, Michigan (The Associated Press, 2021) is not an issue affecting one individual. Instead, it is affecting the whole community, with implications for more significant systemic problems (environmental, political, and infrastructure) that must be addressed. So, the approach to teaching students about such environmental issues must consider cultural and social factors. While there are journals that focus

specifically on environmental education (*Journal of Environmental Education*, *Journal of Outdoor and Environmental Education*, *Environmental Education*, etc.) interdisciplinary journals like the *Electronic Journal of Research in Science and Mathematics Education* have begun to include a foci on issues related to ‘informal science and environmental education’ to reach a wider audience (Hesson & Roth, 2024; Stevenson et al., 2014). Ng and Leng (2022) noted that people who are actively engaged with nature tend to exhibit pro-environmental behaviors. Environmental educators actively engage students with nature and their surroundings (Malik et al., 2024a).

Building on Ng and colleagues (2022), we emphasize that environmental educators operate in teaching spaces that regularly connect students with nature, influencing them to be more pro-environment in their thinking and experiences. Zeiske et al. (2021) stated, “As children are the future generations that would need to adopt large-scale behavioral changes to mitigate climate change, understanding which factors encourage children to engage in pro-environmental behavior is pivotal to reduce environmental problems” (p. 1119). One of the core responsibilities of environmental educators is to teach and design various learning experiences for students that influence their pro-environmental behaviors and their understanding of the underlying science behind the issues. Athman and Monroe (2001) argued that environmental educators “can help foster learners’ innate curiosity and enthusiasm, providing them with continuing opportunities to explore their environment and engaging them in the direct discovery of the world around them” (p. 37). In this study, we present empirical evidence to inform decisions about advancing EE as a field and to better understand environmental educators’ thinking and perspectives.

Few studies explore how an educator from an Environmental Education Center (EEC) perceives and identifies the relevance of environmental issues. Most studies discuss EE and EEC as a field (Braund & Resis, 2006; Casas et al., 2021; Christenson, 2004; Frensley et al., 2022; Haluza-DeLay, 2013; Henderson & Zarger, 2017; Yanniris, 2015). These studies do not address the perspective of an environmental educator. Environmental educators are still developing their place within the science education field; hence, there is limited knowledge about how they operate and identify relevant environmental issues. The field needs in-depth accounts from environmental educators who navigate the unique teaching and learning space that is sometimes formal (in-school context), sometimes informal (out-of-school context), and occasionally interformal (contains elements of both the in-school and out-of-school contexts) when teaching school children and the public about significant and complex environmental issues (Eshach, 2017; Rennie, 2014; Stronach et al., 2026). For this research study, we utilized narrative inquiry to understand the life stories of an EEC educator who plays a dual role in providing field trips, nature walks, summer programs, and after-school programs to students in an out-of-school setting (informal science education context) and also partners with local schools as a science content specialist that includes routine visits to the schools to conduct activities and instruction on EE (formal science education context). This qualitative research study aimed to understand how an educator from an EEC thinks about and identifies the relevance of environmental issues, and to explore the following research question: in what ways does an educator from an environmental education center think about and identify the relevance of environmental issues?

Conceptual Framework and Review of Relevant Literature

Theoretical lens

As science education researchers aiming to understand the perspective of an environmental educator, we relied on a theory rooted in social constructivism (Hess, 1995). Social constructivists believe that social interaction and how people interact with their surroundings affect their learning experience. Environmental educators are vital community members, and diverse social, cultural, and

political experiences shape their understanding and perspectives. Richardson (2003) defines social constructivism as an approach that “centers on how power, the economy, political and social factors affect how groups of people form understandings and formal knowledge about their world” (p. 1624). This argument connects to the social and cultural roots of environmental education as a field. Environmental issues are generally politically charged and socially embedded due to their global impact.

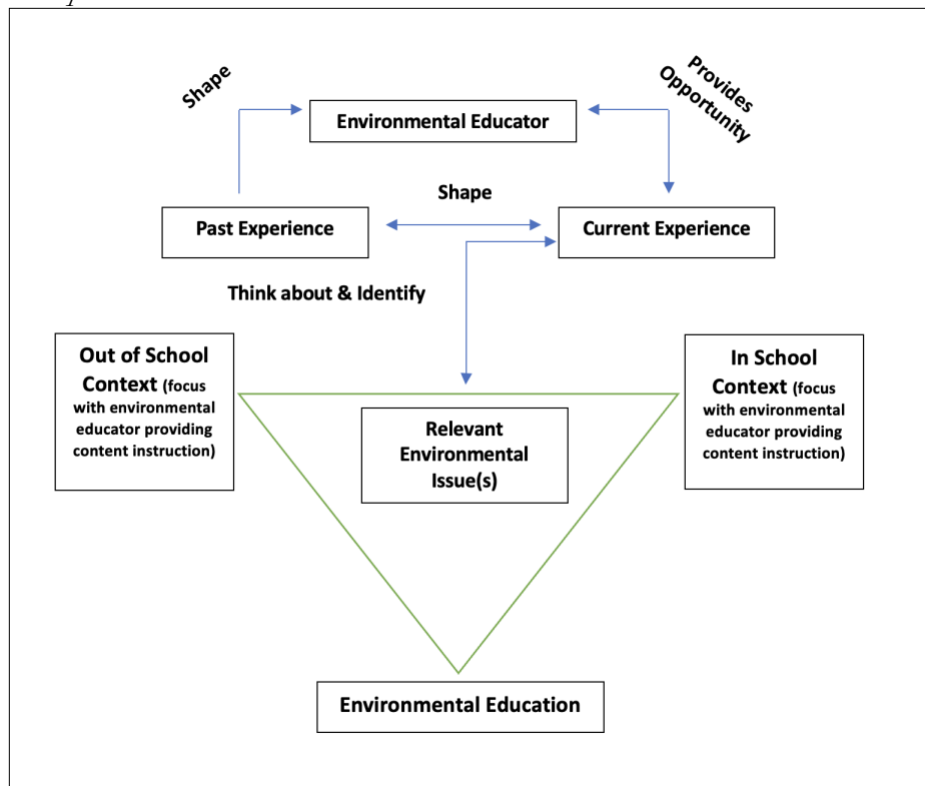
Educators are at the forefront of driving change in student learning, or at least providing opportunities to motivate students to think outside the box to address problems such as environmental issues (Malik et al., 2024a). Aronowitz and Giroux (2003) stated that human beings socially construct knowledge as they interact with their surroundings, which influences their understanding and that of others with whom they interact regularly. Therefore, it is safe to imply that there are various ways an educator develops their own opinions and influences students, particularly when linking instruction with environmental issues. Thus, identifying and unpacking the specific methods environmental educators use in their teaching and thinking about environmental issues is essential to determine what our students are learning, how they are learning, and which social and cultural perspectives influence environmental educators' teaching.

Substantive Constructs

The substantive constructs that comprise the conceptual framework and review of relevant literature for this research study include 1) Experiences, 2) In-school/Out-of-school contexts, 3) Environmental Education, and 4) Relevant Environmental Issues (see Figure 1). These constructs, viewed through the social constructivist lens, helped frame this study.

Figure 1

Conceptual Framework



Note. The conceptual framework illustrates how past and current experiences shape and provide opportunities for educators to develop their thinking about environmental issues. Their experiences can include anything they have learned or experienced throughout their life. They use these experiences to think about and identify their understanding of relevant environmental issues. Once they have developed their thinking about environmental issues, they can use an out-of-school context, an in-school context, or a combination of both, to identify the relevance of these issues to students' environmental education.

Experiences

An educator from an EEC considers environmental issues through their life experiences, encompassing both past and present aspects (see Figure 1). Au (1998) stated, "Because reality is seen to be created through processes of social exchange, historically situated, social constructivists are interested in the collective generation of meaning among people" (p. 299). These social, historical, and cultural aspects highlight an environmental educator's past and present experiences. Combined or individually, these life experiences (past and present) inform the educator's thinking about environmental issues. Barak (2017) argued that social constructivists believe cognitive change is enhanced by social dynamics and subconscious discourse. Taken together, our framework highlights how educators' social interactions, including past and current experiences, inform their thinking about problems like environmental issues. These educators focus on how individuals interact and emphasize taking a bigger picture of society to develop their understanding of the given topic, which in this research study is environmental issues.

In-school and Out-of-school Contexts

An environmental educator from an EEC identifies environmental issues using past and current experiences (see Figure 1). These educators often use both in-school and out-of-school contexts (Eshach, 2017; Malik et al., 2024a; Stronach et al., 2026) to provide students with opportunities to learn about environmental issues while drawing on social and cultural perspectives in their instruction. Falk and Dierking (2010) stated that people who utilize both in-school and out-of-school learning experiences enjoy science-related topics. In a school setting, these educators are seen as science content experts and provide students with opportunities to enhance their science learning. Dillon and Herman (2023) argued that science learning should involve processes beyond traditional classroom and lab settings. In the out-of-school context, these educators can interact with students to provide a practical, hands-on approach to the same science concepts students encounter in their schools. Rennie (2014) stated that "... out-of-school contexts usually involve a degree of volition, so individuals' unique backgrounds and experiences and the choices they make about the nature of their activities can bring about very different learning outcomes" (p.120). Furthermore, Schmäing and Grotjohann (2022) describe out-of-school educators as individuals who teach students about environmental issues at out-of-school locations. Together, this dynamic connection between in-school and out-of-school contexts makes it vital for educators to identify the relevance of environmental issues for students. However, we need more voices in the literature from environmental educators who navigate the complex landscape of teaching science both in and out of schools.

Environmental Education

EE emerged as a field in the 1960s when Rachel Carson published an inspiring book titled *Silent Spring* that highlighted the significance of environmental issues (Sisson, 2018). Shortly after that, the UN Tbilisi Declaration of 1977 became an essential and pivotal convention by documenting an

international trajectory of EE (Hungerford & Volk, 1990). These events shaped the field of environmental education, which continues to develop today. Organizations such as the *North American Association for Environmental Education* (NAAEE) have been working for the last five decades to advance the EE field while facilitating various educators from formal and informal contexts. There are environmental education core concepts embedded in the *Next Generation Science Standards* (NGSS Lead States, 2013) shaping science instruction in K-12 schools, there are textbooks devoted to teaching and learning environmental education at the college level (Ayers, 2017; Chiras, 2009; Robertson, 2021), the NAAEE provides an international emphasis on the teaching and learning of environmental education for both K-16 schools as well as informal science/environmental education contexts (Simmons et al., 2025). Furthermore, international organizations such as the World Wide Fund for Nature (WWF) help shape environmental education in K-16 contexts worldwide (Fien, 2002). These resources can significantly shape an educator's perspective when implementing EE programs and finalizing teaching strategies. This unique nexus of in- and out-of-school settings makes EE a dynamic, socially constructed field of science education (see Figure 1).

Relevant Environmental Issues

One core objective of EE is to teach students about environmental issues using both in-school and out-of-school settings (Dillon & Herman, 2023; Rennie, 2014). Environmental educators teach students about these issues, but how they identify relevant environmental issues remains a question that is not fully understood or explored in the science education and EE literature. We argue that understanding how environmental educators think about identifying relevant environmental issues can be approached by focusing on their narratives. Suppose we want to understand how environmental educators include relevant environmental issues in their teaching practice. In that case, we need to observe them teaching and then talk with them about their pedagogical decisions when working with students. We need to understand environmental educators' knowledge of environmental issues and their causes (Kollmuss & Agyeman, 2002), the scale of the environmental issue ranging from global issues such as anthropogenic climate change (Robinson & Bowen, 2000) to point source pollution such as the degradation of water quality at a local river (Geary & Lucas, 2019; We & Chen, 2013), and we need to understand how the environmental educators transform their understanding of these environmental issues to make them relevant to their students (Malik et al., 2024b). An environmental educator's social and cultural aspects are critical for understanding how they identify relevance, and how they connect it to our conceptual framework embedded in past and current experiences (see Figure 1).

Methods

Methodology: Narrative Inquiry

We used narrative inquiry with a social constructivist lens to investigate the following research question: In what ways does an educator from an environmental education center think about and identify the relevance of environmental issues? Savin-Baden and Niekirk (2007) define narrative inquiry as “an approach that focuses on the use of stories as data” (p. 459). They further argue that narrative inquiry is an approach that goes beyond mere storytelling; instead, it addresses the fundamental concepts that underlie participants' life experiences, shaping their thinking on a given topic. So, our role was to focus on educators' narrative stories to understand their thinking and identify relevant environmental issues.

Participant and Context

One environmental educator, Greta (pseudonym), was selected for this in-depth inquiry from a pool of seven education team members due to her fourteen years of experience working as an educator at the Lloyd Center for the Environment (LCE). Greta's experience includes working with students in both in-school and out-of-school settings. The methodological decision to focus this investigation on a single participant was intentional, as it aligns with our inquiry approach, which uses narrative inquiry (Savin-Baden & Niekerk, 2007). This approach affords us the opportunity to provide an in-depth analysis of our participant's experiences over the years she has spent teaching EE across various contexts during her employment at the LCE. LCE is a Southeastern Massachusetts non-profit organization whose mission includes environmental research, education, and outreach. The center is on 82 acres of land that consists of a maritime forest, salt marshes, an estuary, an outdoor learning pavilion, and two indoor classrooms with various live exhibits (e.g., fish, touch tanks), where they host programming for students of all ages. In addition, the education staff serves as science content experts through sustained formal in-school programming in multiple districts throughout the school year (Malik et al., 2024b). A view of one of the teaching and learning spaces on the LCE campus is shown in Figure 2.

Figure 2

Students are biking at the Lloyd Center for the Environment's Property.



Additionally, LCE offers summer programs annually for students ages six to twelve. From 2017 to 2021, LCE offered 35 overarching education programs catering to approximately 47,250 students of all ages from several major cities and towns in Massachusetts. More relevant information about Greta and LCE is embedded in the findings section for the readers.

Positionality, Bias, Limitations

The first author of this study has five years of international experience with the World Wide Fund for Nature in both Pakistan and the Fiji Islands. During this research, he conducted a capstone research project as part of his doctoral program in science education research. He then participated in a research and teaching fellowship at the LCE, ultimately being hired as its research director after successfully defending his dissertation. During that time, this research project was revisited and adapted for publication. The second author is an associate professor of science education who has established a 12-year working relationship with the LCE, with much of his research agenda focused on teaching and learning in environmental education within the LCE's programs. Together, we are uniquely positioned to conduct this in-depth narrative analysis of Greta's story as an environmental educator. As qualitative researchers, we embrace our bias towards this work and believe it provides us with unique insight into telling Greta's story in ways that would otherwise not be possible (Creswell, 2013; Creswell & Poth, 2016; Maxwell, 2008). While this might be a limitation to this research, and while one could argue that just including one participant would also be a limitation, we view these as strengths, as we were able to explore Greta's story in-depth over time and space, as is typical in narrative inquiry (Savin-Baden & Niekerk, 2007).

Data Collection

The data for this research was collected in Spring 2020 and include document analysis, field observations, and interviews. Initially, document analysis was conducted, including an in-depth review of the LCE's website and program fact sheets, to develop an understanding of the center and its activities and programs. Additionally, two semi-structured narrative interviews, following the guidelines of Savin-Baden and Niekerk (2007) and Creswell (2013), were conducted as primary data sources. Each interview lasted between 60 and 90 minutes. We also observed six education programs (three in school and three out of school) in which Greta served as an instructor. We observed four programs (two in school and two out of school) between the first and second interview, whereas two observation sessions (one in school and one out of school) happened after the final interview. We intentionally had a two-week window between interviews to analyze the first interview data, observations, and documents, and use them to inform the second interview. In total, we produced 51 open-ended questions in three sections: Participant Background, Lloyd Center for Environment, and Context. We used our conceptual framework as a guide, but remained flexible enough to follow the story Greta shared, prompting her to reflect on her teaching and learning about environmental issues. Throughout the interviews, documents were collected (and subsequently analyzed) from Greta, including images, student work, observations, and her instructional materials.

Data Analysis

Interview data were transcribed verbatim. The analysis method was adapted from Creswell (2013), which included data sorting in chronological order for stories typical of narrative inquiry (Savin-Baden & Niekerk, 2007) and developing themes. The analysis helped us understand themes and their connections to Greta's past and current experiences. Using the constant comparative method, we employed an interactive inductive-deductive data analysis model (Strauss & Corbin, 1998). Our deductive analysis started with the constructs in our conceptual framework, and continued as new constructs and themes emerged from our inductive analysis. Our document analysis informed interviews and observations, which, in turn, informed additional document analysis, ultimately leading to our final interview with Greta. The participant's narrative was then

linked to the underlying experiences, and assertions were developed in response to our research question.

Findings

The findings are organized into four sections that include emergent themes related to the constructs in our study: Experiences - Past and Current, Nexus of In-School and Out-of-School Context, Environmental Education from a Local Perspective, and Relevant Environmental Issues as a Local Problem. Each section includes an embedded assertion, supported by excerpts from Greta's narrative.

Experiences - Past and Current

Our first assertion posits that Greta's thinking about environmental issues is developed by her past experiences and is simultaneously matured and informed by her current experiences. These experiences inform Greta's environmental behaviors regarding her thinking about and identification of the relevance of environmental issues. Greta decided to join the LCE because she was motivated by her past experiences working with children and her love for animals. She explained, "*I have always enjoyed working with kids, and I have always enjoyed working with animals. And so, I figured, you know, I would like to learn how to teach.*" Greta explained that her early life experiences helped her choose the profession of environmental education. She stated:

The education piece to me kind of came more as I started doing it more with the [Lloyd] Center. There was a little bit before the center when I was volunteering for the Cape project stranding network. So, other than that, I did not have any teaching background to refer to. But I did a lot of social things growing up. I was in clubs and things like that.

The experiences that drove her to become an educator included volunteering in EE, working with social clubs, and teaching young students. Greta developed most of the formal knowledge and thinking about environmental issues after starting to work at the LCE. This includes part of her current/present experience. She explained,

So, the education part of it for me, I guess, has been slowly cultivating over the years, and so has the environmental part. The [Lloyd] Center really took all of that and kind of put it into focus for me of what I wanted to do with it.

Her past experiences led her to decide to become an educator. However, her current expertise at the LCE has informed and developed her thinking about environmental issues. We asked Greta to explain how she thinks about her past and current experience, informing her thinking as an environmental educator; she replied, "*I would say it's definitely a mixture of both for me. The more I teach, the older I get, the more I understand about what is going on. That's what I try to bring to my teaching as well.*" These experiences (past and current) combined contribute to her thinking about environmental issues and inform how she identifies the relevance while teaching.

Nexus of In-School and Out-of-School Context

Our second assertion states that Greta works at the nexus of in-school and out-of-school contexts, promoting critical student discussions and hands-on activities to identify relevant environmental issues. We first support this assertion with evidence from Greta's in-school teaching experiences, then follow this up with Greta's out-of-school teaching experiences at the LCE.

In-School Settings

In the in-school context, our goal was to unpack stories about Greta's strategies for engaging students during school visits. She explained, *"I try to be a little more engaging in school because they don't have all of those natural resources around them, yet we bring animals into the school and things like that, but you want to capture their attention."* For LCE, the content development of the education programs aligns with the 2016 Massachusetts Curriculum Framework for Science and Technology/Engineering, which is based on and adapted from the Next Generation Science Standards (NGSS Lead States, 2013). Greta's teaching experiences are embedded in the local schools, as the LCE has contracts to provide environmental education throughout the school year. Therefore, aligned with assertion 1, Greta's experiences with instructional materials developed by the LCE and her experiences (past and current) in nature and at the LCE inform her teaching in school contexts. For example, LCE's Erosion program is conducted in an in-school setting. It is designed to be a three-part, classroom-based, hands-on experience investigating how erosion and weathering occur. Within this program, LCE engages students through an activity that includes a student worksheet on ocean waves. Students are divided into small groups (2-4 students per group) and instructed to simulate a wave on a sloped plastic tray filled with sand (a model beach).

Our observations highlighted that Greta's role as an environmental educator involves bringing materials to set up a model beach in school settings to capture students' attention and teach them about the environmental issues related to the topic. Our document analysis found that students are then asked to observe what happens to the sand after the waves subside (see Figure 3). This is one of the critical examples in which educators from LCE focus on tapping into students' social and cultural understandings to address issues such as erosion scenarios. Greta focuses on critical student discussion when conducting in-school programming. For example, the Wave activity is designed to spark conversations with students, encouraging them to self-reflect on their roles within an ecosystem and draw on their knowledge of local shorelines.

Figure 3

The erosion program activity sample worksheet from an Avengers (Pseudonym) student group.

Before test:
Shade in the boxes where the soil appears.

Water											

How many boxes have soil? 6

After test:
Shade in the boxes where the soil appears.

Water											

How many boxes have soil now? 12 1/2

What happened? Erosion & Wethering worked together.

A discussion follows up on the activity on possible solutions to the erosion-related issues. Students experiment with different materials/applications to mitigate the impact of weathering and erosion caused by natural events. Students are engaged in discussions about these topics with the educators to identify not only the science underlying these issues but also to understand how the interaction of these social and cultural settings can help in finding better design solutions to issues like

natural disasters, such as earthquakes, blizzards, coastal flooding, etc., connected to weathering and erosion.

From 2017 to 2021, LCE completed the Erosion program with 1,022 students from across Southeastern Massachusetts. Other LCE programs provide students with different hands-on experiences in an in-school setting, such as bringing various species (e.g., owls, turtles, salamanders, crabs) into the classroom to teach various science topics. Introducing these species in the school sparks discussions among students and high participation (Malik et al., 2024a). For Greta, these stories and interactions with students make teaching the students about environmental issues easier. She believes that teaching environmental content without connecting students socially and culturally will not be impactful. She added,

I think the classroom experience is a very good introduction for students. Sometimes, it's all we get to do. Sometimes we don't get to take kids into the field, so we try to bring as much of the enthusiasm into the classroom and make it fun as well as educational for them.

This includes adding interactive presentations for the kids that involve examples from the local/surrounding areas. For example, one of the LCE programs is called Delphi the Whale, a hands-on classroom experience designed to introduce students to the diversity of marine mammals and their unique adaptations to life in the ocean. Students work alongside LCE educators as they assemble a life-sized wooden model of a pilot whale. Instructors like Greta provide whale artifacts, such as baleen and teeth, for students to examine up close. Using a measuring tape, students experience the length of a blue whale. By doing so, Greta makes it easier for students to understand and learn about local species in their classrooms, with a hands-on perspective.

Out-of-School Settings

To explain her understanding and teaching perspective regarding the out-of-school context, Greta mentioned, *"When you get them out in the field. You kind of let nature do that work for you. You're just there to kind of guide them and direct them."* She explained that utilizing such context allows the students to explore independently and find connections with the environment around them. She added, *"I think the trails and grounds are very important. It gives people a unique view into the environment and a safe place."* This also serves as a learning opportunity for students to work towards safeguarding the natural resources around them. Talking about education activities at the center, she added, *"So, having our teaching pavilion is a really important foundation in the forest, especially for kids who want to touch and look and get distracted and pick things up and do this."* We observed that the teaching pavilion (see Figure 4) overlooks the brackish water body, nested among the maritime forest and surrounded by old stone walls, highlighting the remains of an old farm trail.

This 600-square-foot open-air structure provides a dedicated space for students to engage in hands-on learning. The structure and wooden frame were designed to blend into the center's natural environment. Guiding students to make a connection with the ecosystem that is close to their house or school area. She explained,

We get kids who have never before even looked at the ocean. I mean, they live in [neighboring small city], but they have never actually gone to the beach. And they just look at you, and they go, 'This is the best field trip of my life'.

Figure 4

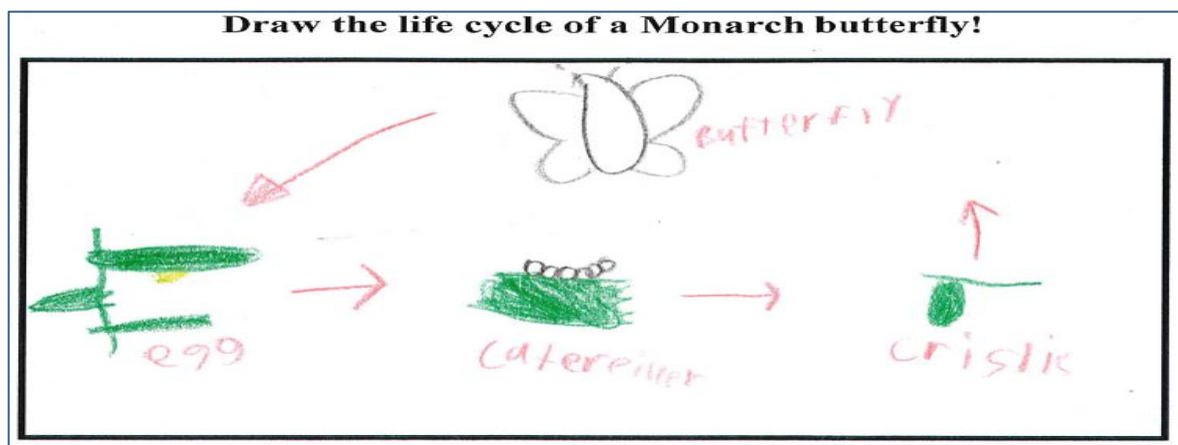
The outdoor learning pavilion at the Lloyd Center for the Environment.



Field trips like these have a lifelong impact on students' learning about environmental issues, providing them with a new perspective on their environment. It helps them understand that their local environment is connected to them and can directly impact their lives and those of all the species around them. For example, one of the LCE's programs that focuses on the out-of-school setting is Monarch Migration. This program is designed to cater to different grade levels. The program introduces students to a butterfly's life cycle, adaptations, identification, and habitats. Students in this program learn about the human impacts on butterflies and that one generation of the monarch butterfly travels a particularly great distance during its life cycle. Our document analysis highlighted that students are engaged in understanding that insects and flowers rely on each other to survive, how an increase or decrease in resources can significantly affect a species, i.e., the monarch population, and how impacts on a monarch's environment can impact their growth. An example of a student activity sheet utilized within this program is shared below,

Figure 5

Monarch Migration activity sample worksheet from a student named Camilla (Pseudonym).



Greta stated that she engages students through follow-up discussions, prompting them to reflect critically on their role as humans who influence the Monarch's life cycle. From 2017 to 2021, LCE completed the Monarch Migration program with 549 students from across Southeastern Massachusetts.

Environmental education operates at the nexus of both in-school and out-of-school settings, as shown in Figure 1. Greta uses these settings to engage students in discussions and highlight relevant environmental issues. For Greta, these discussions and activities are informed by her past and current experiences.

Environmental Education in a Local Perspective

Greta defines EE as a field that teaches students about environmental issues. Our third assertion states that Greta frames EE with a local perspective when connecting with her students. Greta explained,

We teach kids about plants - that they are living things too. We need plants, but a lot of people don't look at it that way. If something's killing off a certain plant, they're like, 'ah, it's a plant,' but it's a very big part of nature, we make that connection.

The idea here is to provide students with a localized approach connected to their surroundings. Suppose kids are struggling to understanding how a local plant affects the global environment's health. In that case, students can see how what might seem like a small or insignificant plant is vital in balancing the larger environment. Similarly, suppose students can see how a small oil leak from their family's car makes its way to the storm drain in their neighborhoods. In that case, they can connect this to how an oil tanker spill in the Atlantic Ocean will affect shorelines and marine pollution problems in the neighboring shipping/fishing harbor. We observed (see Figure 6) students making those connections during their field trip to a local beach.

Figure 6

Students visit a local beach with the Lloyd Center for the Environment's education team.



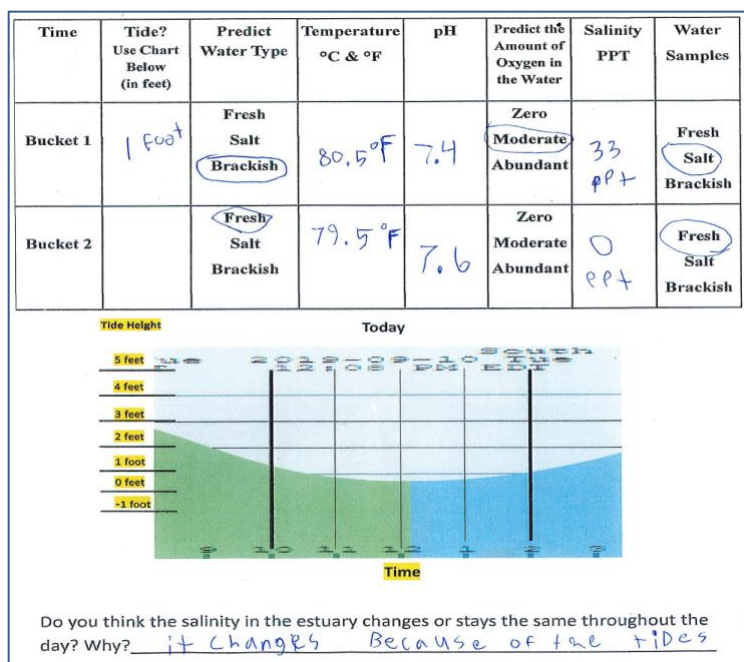
If they can make those local-to-global connections, then EE objectives would be considered a success. Greta explained that the LCE aims to teach students about environmental issues. She added,

Our goal is to educate, inform, and cause a desire to want to help when it comes to nature and the environment. We hope that by not only educating but getting people to understand, they like and appreciate the world around them.

As part of her EE approach, Greta tends to make these problems more personalized and localized for the students. Greta uses examples that align with the students' social and cultural contexts. She explained, *"I am not a global picture person. I look at small local things because that's what I can do. So, when I talked to the kids, I tend to focus on a smaller scale, the more local issues."* A signature EE program at the LCE is Turn The Tide, a three-part, hands-on field- and classroom-based experience designed for upper elementary students. Students participate in a hands-on field experience and two classroom visits. During the program, the field trip section has students explore four water-related stations on the LCE's property. Students engage in weather observations and water-quality testing, explore the biodiversity of the salt marsh, examine the many species of seaweed as indicators of ecosystem health, and participate in dip-net fishing in the estuary. During classroom visits, students learn about the types and amounts of water on Earth, as well as the adaptations of animals living in aquatic environments. Below, our document analysis shows the sample student work in this program (see Figure 7). Students are prompted to think about how a salt marsh or an estuary is connected and the scientific concept of high/low tides in the ocean.

Figure 7

Turn the Tide activity sample worksheet from a student, Camilla (Pseudonym).



The focus of this program is to teach fundamental science concepts so that these students can make visible connections that environmental issues are local problems. Greta explains to students that climate change is a local issue due to rising sea levels and how it affects our local communities. The program highlights local watershed issues to make this relevant to students' lives and experiences. For example, high nitrogen pollution is a significant problem in the estuary along LCE's border. The students learn that the primary source of this pollution is failing septic systems in the watershed, where some of these students may live. From 2017 to 2021, LCE completed the Turn the Tide program with 2,155 students from across Southeastern Massachusetts. Greta thinks that educating students is more impactful when these issues are something the students can personally experience in their surroundings or see.

Relevant Environmental Issues as a Local Problem/Examples

Environmental issues receive significant attention when they affect a local population. Here, we present how Greta explains the relevance of environmental issues. She explained that environmental issues for her entail "*Something that impacts the well-being of a living part of an ecosystem, whether it be plant or animal life. And that can include humans, as well as into the animal life part.*" Developing on her description of environmental issues that involve humans, animals, and society, she shared,

I like to focus on the small things, like, you can recycle, you can, you know, like, the car example, check and see if the car is dripping oil. I like to try to focus on smaller things that kids can look at and do themselves.

Our fourth assertion states that Greta uses social and cultural examples with the students to make environmental issues more relevant. For instance, Greta encourages students to recycle at home or helps them understand how oil dripping from their parents'/guardians' cars can impact the local ecosystem and the environment. Such examples challenge students to reflect on their social and

cultural identities. Engaging students in problems that incorporate social and cultural perspectives on their day-to-day lives helps Greta teach. She further explained,

Explaining the relevance or importance to them. Again, brings me back to the locality of it, what's going to impact them directly. The younger kids are kind of self-centered because, to them, the world is this big [using hand gestures to show small size]. You know their world is small. And so, relating it to things that they interact with or they are going to encounter is a really important step to getting them to care about it and understand it.

Greta explained that understanding students' perspectives is essential when teaching about environmental issues. Each student has their own experience and social/cultural perspective. If we can connect with students on their level, EE's objectives can be achieved more easily. Getting to the level of students' thinking and understanding of the world around them is critical to Greta's ways to identify environmental issues. She believes in providing students with examples that can be easily monitored on an individual basis.

Discussion and Implications

This research study examined Greta's life stories to understand the ways she thinks about and identifies the relevant environmental issues in the region. Sosu et al. (2008) explained in their study that educators would teach a topic effectively if they found motivation or personal meaning in the content. Greta's stories highlight a positive connection between her past and present experiences and her thinking about environmental issues. Greta's life stories of working with animals and doing outdoor activities as a kid informed her decision to become an environmental educator. Ng and Leung (2022) argued that people who are connected to nature tend to exhibit more pro-environmental behaviors. Greta's interest in the outdoors and her passion for teaching drove her to become an educator and join the LCE. These early childhood experiences helped her think about environmental issues from a more personal perspective, such as viewing them as local problems. Something that affects her day-to-day life.

Greta's experience in the out-of-school context involves activities such as field observations, field trips to local beaches and wetlands, and other activities. Eshach (2007) explained the importance of out-of-school learning as "scientific field trips to science center can generate a sense of wonder, interest, enthusiasm, motivation, and the future" (p. 178). Greta explained that in an outdoor context, nature takes over, and students get more engaged in the teaching. Such experiences involving out-of-school settings allow students to understand and experience how a scientist operates in a field (Schmäing & Grotjohann, 2022). However, Greta makes a significant effort to bring the outdoors into the classroom for students when leading school environmental education programs. Greta transitions seamlessly between these two spaces.

Greta shared stories about the various methods she uses in in-school programs, such as discussion-based lectures, hands-on activities, and classroom lectures, to keep students engaged and interested in environmental issues. Christenson (2004) argued that for environmental education content to be more impactful, it needs to be more explicit in connecting the educational objective to the goal of the activities. Greta's teaching methods promote collective contribution from participants to create, discuss, and improve shared science ideas and knowledge (Akgun & Sharma, 2023). Greta's local perspective approach, while setting the objectives of the education programs and activities, helps build these social and cultural connections with students' local environments, aligning directly with a social constructivist worldview (Richardson, 2003). She provides examples that connect to students' day-to-day lives. This connects with Hungerford's (2009) assertion that the educator's role in promoting critical thinking can inform positive science learning. Greta's expertise as an EE, along

with her purposeful efforts to bring the outdoors into the classroom with live animals and artifacts, aligns with recent research on this instructional space being interformal (Stronach et al., 2026).

To highlight the relevance of environmental issues, Greta focuses on educating students about local issues, mainly by using examples they can connect with, such as their homes, schools, or local areas. For example, in the Monarch Migration program, Greta's goal is to provide students with hands-on experiences while connecting them to their local environment, i.e., the local beachside area. She helps students connect these environmental issues to socio-cultural aspects. For Greta, this is EE's primary objective. Zeiske and colleagues (2021) highlight environmentally responsible student engagement as an essential factor given the seriousness and urgency of environmental problems for future generations. The positive relationship between students and Greta helps her identify the relevance of environmental issues across in- and out-of-school contexts, using personalized and localized examples, such as impacts on their local watershed areas and failing septic systems — i.e., point-source pollution factors — which align with our conceptual framework. We conclude that to achieve positive science learning, students must connect such environmental issues with their day-to-day lives. Greta engages students to look in their neighborhoods or at their homes and analyze how these social and cultural aspects affect the environment around them. For example, while teaching students about different low and high tides in the ocean, Greta connects climate change to rising sea levels. Wang et al. (2019) highlight climate change as one of our most significant environmental issues. Our findings support the idea that such connections for students are helpful because they make them realize that humans and nature are interconnected and that climate change is a reality everywhere around the globe.

Recommendations: Implications for Practice and Future Research

The findings from this research study add to the body of research about environmental educators who operate from an EEC. These educators are the people who interact with the students and teach them about core environmental issues (Malik et al., 2024c). These educators also frequently interact with schoolteachers, parents, and administrators (Malik et al., 2024b). Our findings suggest that understanding how these educators think and identify environmental issues is valuable for classroom teachers who often partner with them on classroom activities. For example, classroom teachers can use the same examples and perspectives to align their teaching. Future studies should focus on collaboration among formal classroom teachers and educators typically categorized as informal science/environmental educators, perhaps building on the work describing this space as interformal (Stronach et al., 2026). More research is needed to understand how collective resource sharing can occur among these distinct yet sometimes overlapping groups of educators. Perhaps science teacher preparation programs could also address ways classroom teachers can collaborate with and learn from local science/environmental educators. Some of this is occurring (Malik et al., 2024b; Hesson & Roth, 2024), but more research is needed in this area to address how the experiences of environmental educators can inform teaching and learning practice. Understanding environmental educators and their instructional decision-making also provides a unique example of how these teachers acquire new or update existing understandings of environmental issues.

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