Educators' Perspectives on the Role of Outdoor Environmental Education: A Case Study with KIDS for the Bay

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ABSTRACT

Education is a powerful tool for creating change, and the climate crisis requires effective, accessible, and expansive outdoor environmental education (OEE) in order to solve the issues plaguing our Earth. The curriculum and environmental educators of OEE programs bridge the gap between nature and students; consequently, their design has profound implications. The complexity of the factors influencing sustained interest in the environment underscore the importance of comprehending their impact on students' motivation to care about environmental issues and possible pursuit of environmental careers. Programs such as KIDS for the Bay (KFTB) demonstrate how OEE programs can facilitate connections to nature. Their staff holds key insight into how educators in Outdoor Environmental Education aim to cultivate early and sustained interest. I chose to investigate this further by exploring how the educators' backgrounds inform the learning experiences they provide, their views on effective and accessible OEE, and how factors of the Social Cognitive Career Theory predict interest development. I invited employees of KFTB who currently work in the environmental educator position to participate in this study and conducted semi-structured interviews with participants. Several key themes emerged, including the role of higher education experiences in shaping their pedagogies, place-based education connecting to lived experiences, and providing inquiry- and sensory-based opportunities for students to develop confidence. Based on our conversations, I found that staff-diversity, employing asset-based strategies, promoting eco-cosmopolitanism, and having a flexible curriculum are essential components of successful OEE that has the potential to inspire the future generation of environmental-career holders.

KEYWORDS

place-based learning, inquiry-based learning, self-efficacy, Social Cognitive Career Theory (SCCT), interest

INTRODUCTION

Education is a powerful tool for creating change, and the climate crisis requires effective, accessible, and expansive outdoor environmental education (OEE) in order to manage the issues plaguing our Earth. However, student education is stunted by the growing disconnect between students and outdoor spaces: a concept coined as nature-deficit disorder (Louv 2009). Higher levels of environmental literacy are linked to more environmentally responsible behavior, and age is a determining factor, suggesting that youth programs should be supported (Cincera et al. 2022). Immersive, holistic, experiential outdoor education incorporates moral education that can lead to improved attitudes toward the environment (Begum et al. 2022). Because climate change is the greatest threat to the future of humanity, it is crucial that education focuses on producing problem solvers, which is the skill area that sees the most gain from outdoor education (American Institutes for Research 2005). Students must be made aware of the intensity of environmental issues and given a chance to develop a connection with the environment before they can act, and this deficit in awareness, knowledge, and compassion can be addressed through environmental education.

The methods and curriculum of OEE programs, along with environmental educators, bridge the gap between nature and students; consequently, program accessibility, design, and staff have profound implications on students' environmental awareness and action. In classroom settings, lack of proximity to natural spaces that can double as an outdoor classroom is believed to most often be the hindering factor in OEE (Wolsink 2016). Historically, environmental injustices can be seen by the inaccessibility to natural spaces and OEE for BIPOC communities (Kephart 2022, Warren and Breunig 2019). This suggests that programs removing these barriers for under-resourced schools are key to expanding OEE. Once that barrier is removed, one of the most important factors becomes the OEE educators themselves, as well as the manner and content of the communications between them and their students (Kopar 2013). Despite issues of access, educators who use the environment as a context for teaching often experience greater enthusiasm and commitment towards teaching due to the perceived sense of reward, improved interactions with students and colleagues, and intellectual stimulation (Lieberman and Hoody 1998). Studying the experiences of the staff and function of these programs can help more clearly identify their goals. The way that these programs are designed and executed determines

the effectiveness of OEE, either creating or hindering benefits for youth and interest in the environment.

The complexity of the factors influencing interest development underscore the importance of comprehending the longevity of the benefits of OEE experiences and their impact on students' motivation to care about sustainability. Social Cognitive Career Theory outlines socio-cognitive variables that can help predict students' interest in the environment and environmental careers, including self-efficacy, expectations, role-models, and perceived support and barriers (Quimby et al. 2007). Related is a fear of failure, and how it intertwines with family cultures and personal identities can heavily influence some of the variables, making students reluctant to see themselves as scientists (Ambrosino and Rivera 2023). The SCCT is an appropriate framework to assess interest in the field of sustainability (Međugorac et al. 2020). However, the intended long-term effects of short-term OEE interventions, such as through programs and projects, on students are not widely studied.

Programs such as KIDS for the Bay (KFTB) demonstrate how OEE programs can facilitate these interventions. Their staff holds key information about how they impact environmental attitudes. In this study I aim to understand: How do educators in Outdoor Environmental Education aim to cultivate early and sustained interest in the environment? I accomplish this by addressing the following subquestions: (1) What aspects of environmental educators' experiences and worldviews shape the OEE experiences that these programs offer? (2) What components make for effective and accessible OEE? And, (3) How does OEE facilitate opportunities for students to develop a long-term interest in the environment? I predict that environmental educators will be greatly motivated by their own adolescent outdoor experiences because their lived experiences have provided a connection with nature. I predict that effective and accessible OEE will prioritize affordable, sensory-based approaches because outdoor education is more exploratory by nature. I predict that factors such as self-efficacy and outcome expectations will be the most prominent factors in the OEE curriculum because they often inform goal formation. I will answer these questions by conducting semi-structured interviews with program staff.

BACKGROUND

Key terms

Outdoor environmental education

The acronym OEE has two definitions in education literature: Outdoor Environmental Education and Outdoor Experiential Education. For the purposes of this paper, I will be using the term Outdoor Environmental Education. OEE, simply, is environmental learning that occurs outdoors (Reese 2018). It is an aspect of environmental education that is meant to be immersive and experiential. In this paper I assume that OEE is an "intentional pedagogic strategy that rests on the foundation that authentic outdoor, place-responsive learning offers greater connection to the land, to oneself and to others, than more typical approaches in mainstream education" (Reed 2022). The goals of OEE is commonly to bring greater awareness to human dependence on and connection with nature, as well as our place within it, through sensory-based experiences that help bridge the perceived-separation of humans and nature (Nicol 2003). OEE makes students an active part of the learning experience. By delivering outcomes related to sustainability education, it aims to not only increase knowledge, but also develop connections, environmental attitudes, and sustainable behavior for students (Nicol 2003, Johnson and Cincera 2021).

Environmental attitudes, literacy, and consciousness

Of the various terms used to describe the relationship between humans and the environment, environmental attitudes, environmental literacy, and environmental consciousness are key to developing an awareness and connection with the environment.

In this paper I refer to 'environmental attitudes' as the attitude towards the natural environment. More specifically, they are "the collection of beliefs, affect, and behavioral intentions a person holds regarding environmentally related activities or issues" (Schultz et al. 2004). When discussing attitudes, I am discussing levels of concern. These levels, for example, can fall into categories such as egoistic, altruistic, or biospheric concern (Schultz 2001).

Environmental literacy has to do with knowledge and awareness. According to the California Environmental Literacy Task Force, a person who is environmentally literate "has the capacity to act individually and with others to support ecologically sound, economically prosperous, and equitable communities for present and future generations" (Environmental Literacy Taskforce 2015). Environmental literacy is specifically achieved through a combination of indoor and outdoor environmental education.

Environmental consciousness is a much broader concept that encompasses both environmental literacy and attitudes. It is "the extent to which a person engages in pro-environmental behaviors of diverse kinds, particularly those which are more costly" (Jiménez-Sánchez and Lafuente 2010). Environmental consciousness combines the affective, cognitive, dispositional, and active dimensions in a bidirectional way, as illustrated in Figure 1 (Jiménez-Sánchez and Lafuente 2010).

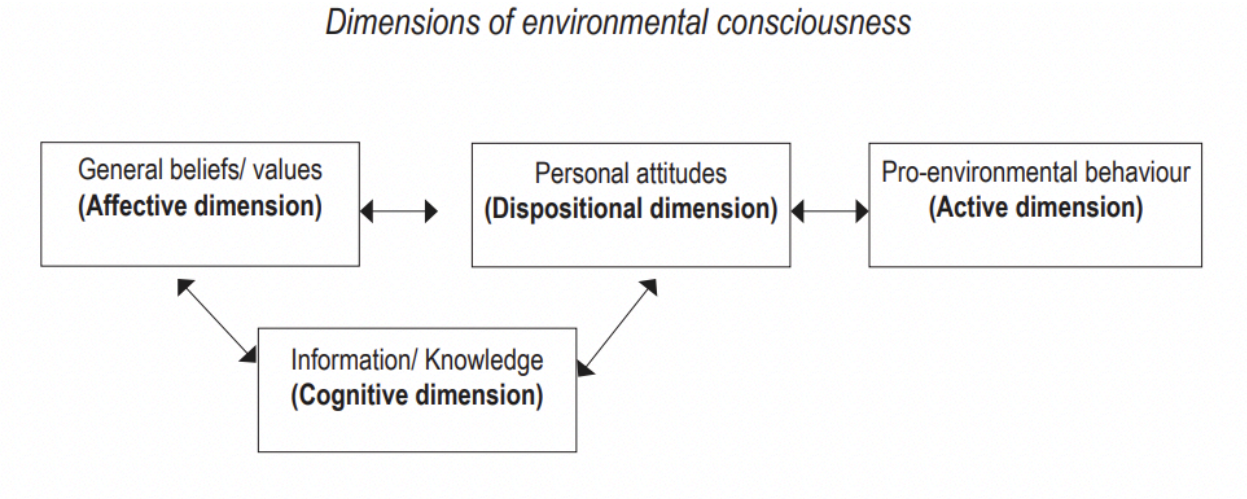

Figure 1. This figure illustrates the bidirectional influence of each dimension of environmental consciousness. (Jiménez-Sánchez and Lafuente 2010)

Theoretical framework

Social Cognitive Career Theory

The Social Cognitive Career Theory (SCCT) is a useful framework to investigate how different socio-cognitive variables influence career choice and professional identities. It is an extension of Bandura's (1986) social cognitive theory and has risen to prominence due to its consideration of contextual factors in the formation of vocational interests, career goals, and actions once in these roles (Schaub 2004). Three of these factors are expressed as interlinked mechanisms that the theory revolves around: self-efficacy, outcome expectations, and goals (Lent et al. 1994). Self-efficacy is a popular term found in career theory literature and refers to personal judgment about capabilities based on past performance ("Can I do this?"); outcome expectations refer to imagined consequences including financial gain, societal approval, and self-satisfaction ("What will happen if I do this?"); goals refer to the way in which behavior is guided and organized in order to achieve preferable outcomes (Lent et al. 1994). SCCT focuses on how interests are developed, choices are made, and performance is conducted (Lent et al. 1994). Outcome expectations and self-efficacy are used to assess a situation and set goals, resulting in actions that help achieve those goals (Byram et al. 2021).

Specifically related to the sciences, it is believed that SCCT is a good predictor of interests, persistence, and performance (Quimby et al. 2010). This persistence is a key component in long-term studies in the field of science education that aim to analyze interest and retention in the field. The core variables in SCCT can help explain how students form science-identity, defined as recognizing oneself as a person of science (Ambrosino and Rivera 2023). The elements of an outdoor education program can be analyzed through SCCT to better understand how they are impacting students' experiences.

Case study: KIDS for the BAY

The Bay Area poses a unique opportunity for implementation of outdoor environmental education due to its geography and access to different ecosystems. One program that makes use of this opportunity is KIDS for the BAY (KFTB).

KFTB is an environmental education program that collaborates with elementary schools in the San Francisco Bay Area to deliver engaging outdoor environmental education and inspire environmental consciousness, according to their mission statement, (KIDS for the BAY 2023). Their motto, "Everyone is an Environmentalist," captures the essence of inclusive environmental education and the idea that all students have the potential to develop positive environmental attitudes. KFTB offers a variety of programs to get kids connected, including, but not limited to, a watershed action program, a storm drain rangers program, classroom workshops, field trips, and academic credit for teachers.

The target audience, organizational strategies, anticipated changes, and values and guiding principles of the organization are clearly outlined in KFTB's Theory of Change concept map (See Appendix A). Within the San Francisco Bay Area, KFTB aims to serve elementary school students, especially under-resourced communities, elementary school faculty and families, and school districts and leaders. A map of some of their partner schools and field trip locations shows their reach (Figure 2).

Their organizational strategies include connecting children with both their local and larger estuary watershed environments, engaging them in hands-on environmental science education inside and outside of the classroom, empowering them and their families to become environmental stewards, and providing funding and resources for schools to deliver effective environmental science education (KIDS for the BAY 2023). By implementing these strategies, KFTB anticipates that elementary school students will increase their connection with nature, increase their knowledge of watershed science, and increase their active engagement in environmental stewardship; they expect that teachers will gain confidence in teaching environmental science; they plan on partner schools implementing KFTB programs into their curriculum; and they expect that the students' efforts will result in a healthy environment in their local watershed (KIDS for the BAY 2023). The values and guiding principles of the program include diversity, equity, and inclusion; place-based environmental education; action-based learning; and scalable, sustainable program impact (KIDS for the BAY 2023).

Evidence that KFTB is accomplishing what it has set out to do is available in the publicly available annual reports on their website. Since its founding in 1992, KFTB has connected a multitude of schools to the environment. Statistics about their engagement and environmental impact show their cumulative impact over 32 years (Figure 3).

As a local program with a long, well-documented history, KFTB is a suitable program to study outdoor environmental education. Their staff of environmental educators are dedicated professionals in their field and can offer a unique perspective on both their experience in the field and how they see it impacting their participants.

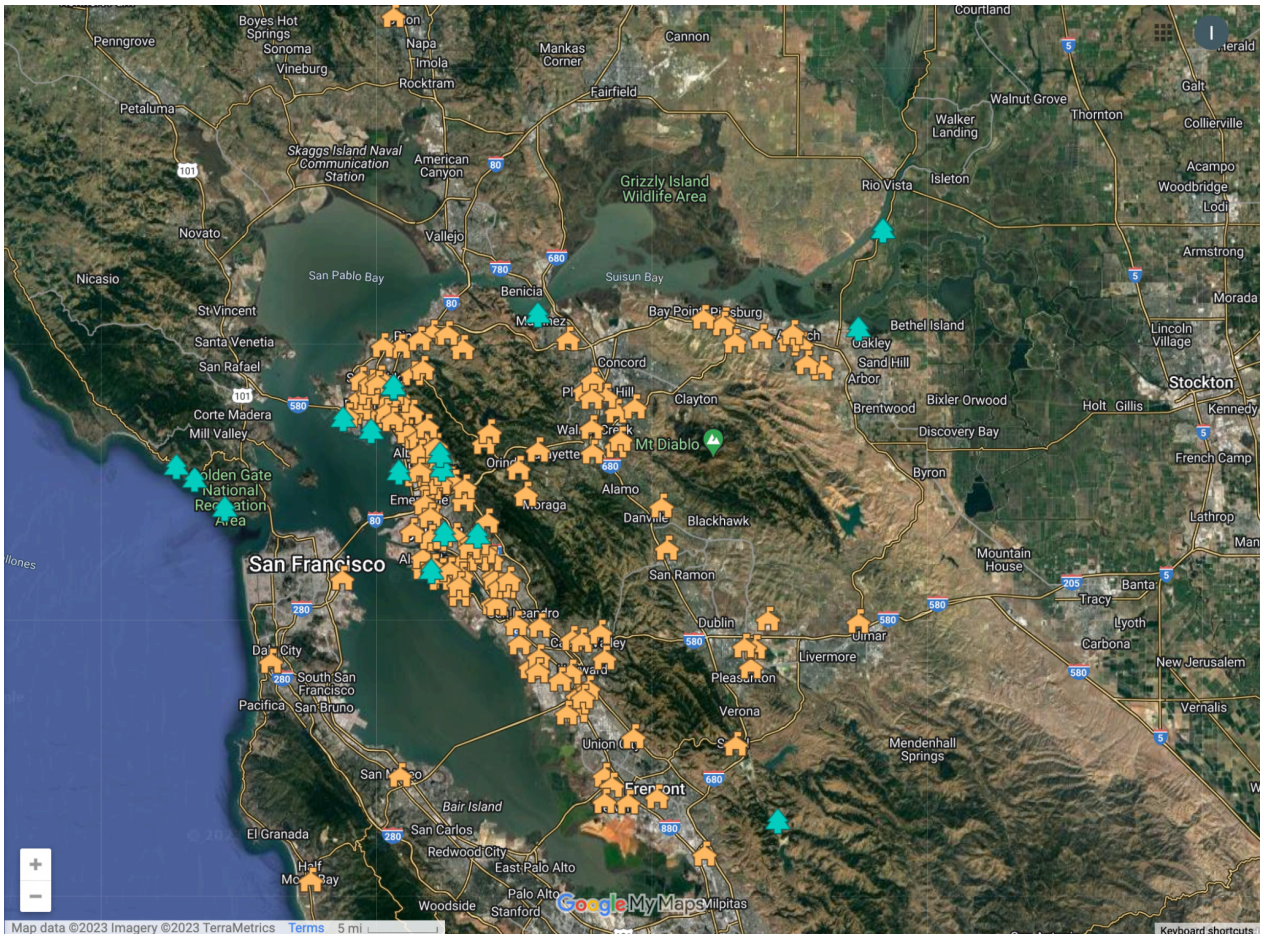

Figure 2. KIDS for the Bay's reach: partner schools in orange and field trip locations in blue. (KIDS for the BAY 2023)

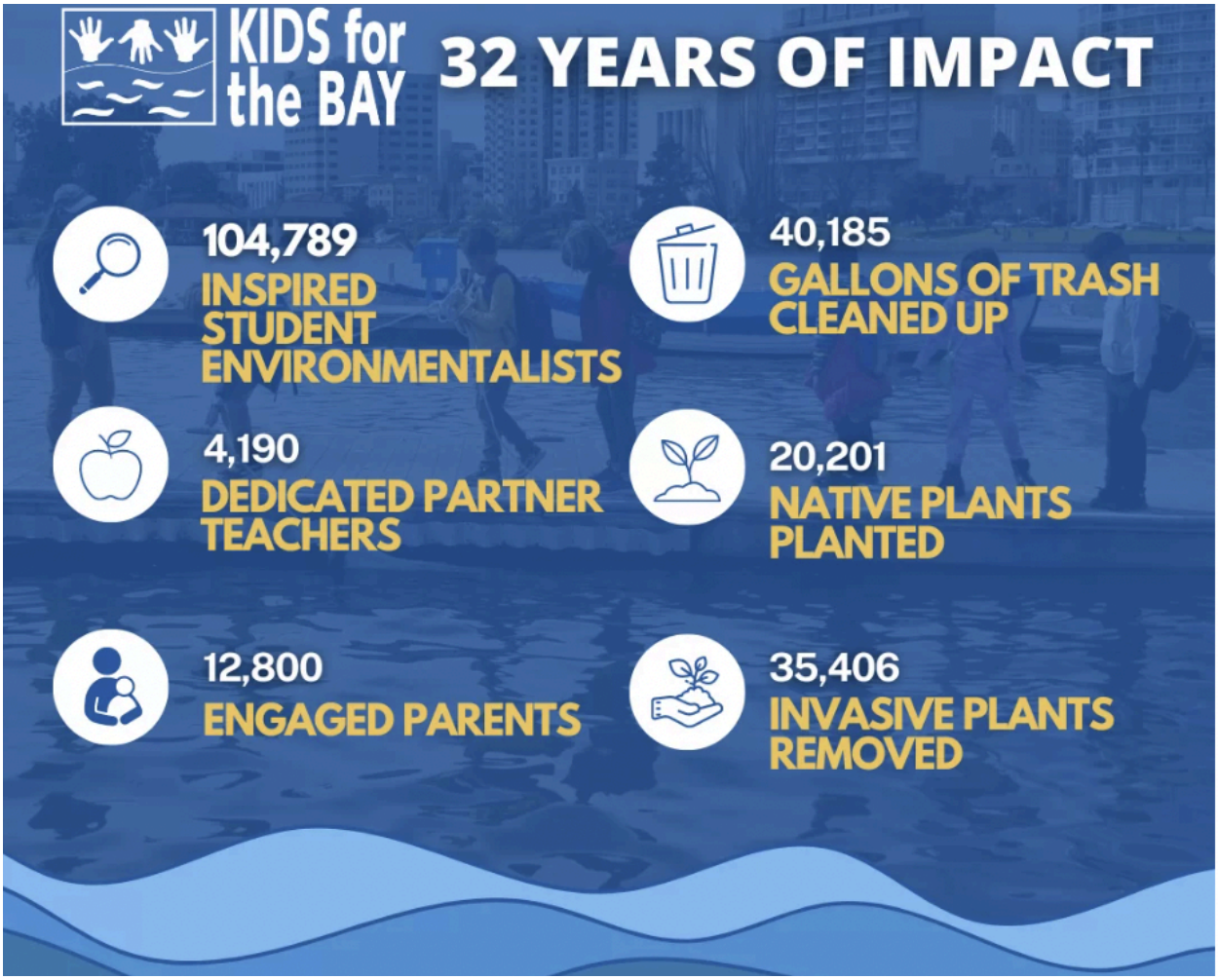

Figure 3. KIDS for the Bay's Impact. (KIDS for the BAY 2024)

METHODS

To investigate my research questions I employed a qualitative approach to comprehensively understand the narratives and perspectives of educators in the OEE field.

Participants

I invited all employees of KFTB who previously or currently work in their environmental educator position to participate in this study, using a purposive sampling strategy. Purposive sampling was the most appropriate choice for this project as KFTB educators can provide

valuable insight from a well-established program with a wide reach. The scope of this study included 4 interviewees, all of whom provided informed consent upon reviewing the details and purpose of the study. I required participants to have at least 1 year of teaching experience at KFTB and be actively involved in OEE education in their role, either by working directly with youth or developing the curriculum materials.

Instruments

I used email communication to connect with the executive director and founder of KFTB, who then invited other educators in the organization to participate. After several rounds of communication, I recruited 4 participants.

I deemed a semi-structured interview appropriate because of the goals of this case study. I then wrote 6 open-ended questions based on my research questions and conceptual and theoretical frameworks. I explored topics such as participants' history in OEE, their opinions and definitions of successful OEE, and the opportunities provided to youth participants.

Table 1. Semi-Structured Interview Questions

1	How long have you been with KFTB and what is your role?
2	How did your interest in OEE start and develop?
3	What environmental issues are you most passionate about right now? In what ways do you incorporate these into your approach at KFTB?
4	Now imagine I'm accompanying you on your most ideal/effective day with these kids. Describe this day for me.
5	From your experience, which successful components of your work at KFTB would you recommend be implemented in other OEE programs? ● How can KFTB's diversity policy be implemented in other programs to make OEE more accessible to students of color and under-resourced schools? ● What do you do at KFTB to instill confidence in kids that they have the skills necessary to better the environment? ● What do you do at KFTB to help kids understand the consequences of their behaviors regarding the environment?

	● How are kids given the opportunity to set personal goals related to the environment?
6	Lastly, regarding your own goals, where do you see yourself in five years?

Data collection

I conducted a semi-structured interview once with each participant to allow for flexibility and follow-up questions based on their responses. I conducted the interviews either in person or virtually (Zoom), depending on the preference and availability of the participant. Each interview lasted approximately one hour. I recorded the audio and saved data as audio files. I used the Zoom Cloud features for the initial transcription and corrected upon listening to the audio files. I transcribed each interview verbatim, then returned selected quotes to participants for validation.

Data analysis

I openly coded interviews for patterns, recurring ideas, and common topics. I performed analytic coding to categorize themes, and thematically analyzed answers about youth participation using SCCT as a theoretical framework. This was an iterative process I completed for each interview. First, I noted initial ideas; second, I generated initial codes and compiled data that was relevant to each code; third, I searched for themes that emerged from the data and sorted data according to these; fourth, I reviewed and sorted the codes according to the themes; next, I defined and named the themes and subthemes by refining them and producing clear definitions of each; finally, I narrowed down extracted examples that relate to the themes and overall research questions (Braun and Clarke 2006).

RESULTS AND DISCUSSION

Being an educator is a multifaceted and central role in shaping the minds of future generations. Understanding educators' perspectives and intentions in Outdoor Environmental Education can help inform future OEE efforts that aim to create a more sustainable future. The inductive analysis of the interviews produced 11 major themes related to the topics outlined by

my research questions. In the following paragraphs, I provide tables that summarize the emergent themes and provide quotations from the interviews that support my findings.

Educators' experiences and worldviews

Table 2. Emergent themes regarding educators' experiences and worldviews

Topic	Themes
Educators' Experiences and Worldviews	*Experiences in higher education*
	Personal interests and objectives

My investigation into educator identity in environmental education shed light on the diverse backgrounds, interests, and goals of educators. It is important to note that each educator had a unique trajectory that led them to their current role, with different experiences working with the environment, youth, and/or education. Their own individual experiences and perceptions led them to their role as educators and shape their practice (Hedges 2012). In other words, they are not blank slates regurgitating information, but people with complex, lived histories that influence their interactions with students.

Experiences in higher education

All participants spoke about a pivotal moment in their higher education experiences that either set them on the path towards outdoor education or inspired their approach once there. However these experiences were all extremely varied, ranging from service projects to teaching marine science lessons to working as a floriculturist:

> *"My focus both in grad school and then what I was trying to embody in the classroom was very much anti-racist teaching and anti-bias teaching. And so I think, like a lot of my interest in environmental science goes to environmental justice."*

> *"And so, as I was going through my college days… and one of my classes, it was also a pilot program class where we…would go to a middle school that's close by to our school,*

and we would build a cob bench for those kids in their garden and help them build it, and we would also have an outdoor ed class."

"But my sophomore year of college was when there was just an advertisement in some local paper. Like, 'Volunteer for marine science student lessons', or whatever, and I was like that sounds awesome… So I started doing education then."

"All the extracurriculars that I ended up joining kind of centered around outdoor education…probably the most impactful thing I did in my college was working at the student farm."

I expected conversations about their motivation for entering the field to involve childhood anecdotes relating to nature, but their experiences in higher education were brought up more frequently. They each found value in the knowledge that they gained by either studying or practicing education in college, and carry those experiences with them in their current roles. Teachers also emphasized extracurricular or volunteer experiences, which suggests that OEE educators draw from their informal learning experiences in their career motivation. Their approaches blend the knowledge gained from theory and informal educational experiences outside of the classroom.

Personal interests and objectives

The experiences that KFTB offers is directly molded by the educators' unique interests and objectives. One discussed her passion for art at length, and how surreal she found it that she gets to incorporate this passion in her work with kids:

"I also really wanted to do something art-wise with the environment, or with kids and like, get them out and do an installation."

Others explained their personal pedagogies and what they hope students take away from these experiences:

> *"My whole pedagogy is people taking stewardship of the land that they're on and connecting people and fostering wonderment…recognizing and then realizing, appreciating and then stewarding."*

> *"So I think that I'm always really interested in making kids think very critically about what they're learning and also like, be able to zoom out a little bit."*

> *"Ultimately, my personal goal is to get students and humans interested and curious about nature, and knowing that we are not disconnected from it, and that we are connected."*

The educators each brought up methods that they find essential for teaching. Acknowledging and celebrating the diversity of OEE educators' approaches helps emphasize that their agency and personal pedagogies add value to the field of OEE by weaving different skills and environmental attitudes throughout their lessons. Objectives brought up in these discussions include environmental ideals such as stewardship of land, connection to nature, and the ability to critically think about our responsibility and power in regards to environmental issues. Each of the educators' identities and personal histories inform these objectives and can narrow the aims of the KFTB curriculum.

Effective OEE

Table 3. Emergent themes regarding effective OEE

Topic	Themes
Effective OEE	*Place-based education*
	Inquiry-based learning
	Avoiding climate shame

The educators offered insight into what they believe makes OEE effective. This helps create a better understanding and common definition for what effective OEE not only achieves, but also includes in its curriculum.

Place-based education

Place-based education "draws upon local cultural, environmental, economic and political concerns" (Smith 2007) that transforms learning into a meaningful practice that centers the students' learning in their community (Buck et al. 2016). Students are more likely to draw upon their personal experiences, relate them to the environmental content, and understand how the content can help their community (Buck et al. 2016). The educators shared their own views on how students respond to place-based education:

> *"I feel like that's what really also gets them excited is that it's about their community. It's about where they are, where they're growing up."*

> *"I think creating that sense of place for a student also, just like where they are, how they fit into their overall world and greater environment like… just reminds students that the world is out there, that we're connected to it, how we're connected to it."*

One of the educators emphasized how place-based education can create a sense of community:

> *"It's important to remind them that, and that we are a social species. And as much as I love being by myself, I would not be able to survive, and last by myself all the time. And like, I rely on other humans."*

Place-based education promotes eco-cosmopolitanism, a sort of ecological world-citizenship that explores how local cultures and ecology connect at the global scale (Heise 2008). The educators suggest that effective OEE helps students develop a 'global imaginary:' the belief that one is a member of a global community, and being able to visualize their ties to it

(Steger 2020). It is important for educators to connect topics in their curriculum to local geography and then connect that to the world. KFTB accomplishes this by connecting students to their local watershed and with field trips to different parts of it: from creeks to the bay itself.

Inquiry-based education

When students are given the opportunity to investigate meaningful questions themselves, it can lead to improved understanding of phenomena (Tal et al. 2019). Inquiry-based outdoor education has the potential to evoke diverse learning experiences and ignite meaningful questions that the students care about (Steele et al. 2016). Every educator at KFTB mentioned the importance of having the disposition to allow for inquiry based learning. Two specifically brought up how these sparked interests make the experience more fun:

> *"And then also be okay with a little bit of chaos, and be okay, with a little bit of like students running around, asking questions. Because that's the fun of it, which is very different from a classroom."*

> *"Seeing what the kids are more interested in… I feel like having that slight freedom is really important just because each class is different… So their interests spark in different activities that we do with them. So it helps us help the kids have more fun. And also to have that lasting impact which is one of our goals to really get them to remember us."*

> The other two touched on the importance of being flexible and paying close attention to what students are interested in/wondering about:

> *"Because there's times in my lessons where we have this set curriculum, or I have a set agenda and idea of where things are gonna go. But then, based off of the questions that come, it's like, 'Oh, they're really interested in this.'"*

> *"Perfect day: I could talk to every single kid. And, get to know how they're feeling and follow up on what they're wondering about and then do a project based on that. Where they have ownership of it."*

For these educators, participatory education and letting students' interests dictate what is studied is key to effective OEE. Like one educator stated, the questions that arise from them being able to run around and explore the outdoor space are different from what would come up inside of the classroom. The students are able to employ their senses and guide their own learning. This type of approach demands a lot of the educators: they must expect the unexpected and be prepared for a wide variety of topics to arise. Because of this, it is crucial that OEE educators are comfortable with the outdoor settings they work in and with the curriculum. A successful day might then look different every day, and it becomes harder to standardize learning targets, suggesting that a balance must be struck between both teacher-led inquiry and student-led inquiry for effective OEE.

Avoiding climate shame

Another component of effective OEE is leaving students feeling empowered to address environmental issues and a sense of both personal and civic responsibility (Athman and Monroe 2021). However, educators must instill this sense of responsibility without leaving students with feelings of guilt or shame. Every educator emphasized this last point: they never aim to go into classrooms and make kids feel bad about choices they're making. They are there to help them envision a different future, and to inspire them to make sustainable decisions once those choices are in their hands:

> *"I think that it makes sense to talk a little bit about personal responsibility ... But let's also think about ways that we can engage with our leaders in the government, and things like that, to change things… But I just wonder if that is something, if there is a guilt that they walk away with, or if it's more of just a responsibility. Because they feel different. I would hope it's more of a responsibility rather than like a shame around it. But I think*

also being able to zoom out and understand all of the other things that are at play would allow that, if there is some guilt, allow that to dissipate."

"We never wanna make kids feel guilty for what they have… we never tried to make them feel bad about it. We just try to give them different ideas on what to do with them afterwards."

"That's important to me, like, I don't wanna make anyone feel like [we're] shaming them, or anything like that, ever."

Their views echo arguments articulated by Martha Nussbaum, against shaming individuals, that shaming penalties are often disproportionate to the problem they are addressing and tend to not target the right people, threatening their dignity (Fredericks 2021). It is dangerous to shift our attention to blaming individual actions, as this risks ignoring the intersectionality of the climate crisis and the fact that those suffering the most are often contributing to the issue the least. Effective OEE leaves students feeling obligated to take personal responsibility to protect the environment without making them feel guilty for decisions that are largely out of their hands.

Accessible OEE

Table 4. Emergent themes regarding accessible OEE

Accessible OEE	*Support for teachers*
	Adequate funding
	Connection to lived experiences

Many barriers exist for BIPOC and low-income youth that result in inequitable access to OEE opportunities (Ellington and Prado 2024).

Support for teachers

Teacher shortages are a global phenomenon, resulting in imbalanced student-teacher ratios and overburdened educators (UNESCO 2024). As a result, outreach and persuading teachers to register can be a major challenge for OEE programs (Ellington and Prado 2024). Educators at KFTB stressed the importance of making the OEE experiences as little work as possible for the classroom teachers who already have full plates and busy schedules. Classroom teachers often cannot afford to take on another project, so in order for OEE to be accessible it needs to be less demanding on classroom teachers:

> *"[It's] overwhelming to plan all of that. So getting to be the person who goes into the classroom and kinda can bring that in and also give the teacher a chance to take a step back and be like these are things that are possible without you having to do all this extra effort, because I would have loved that as a classroom teacher."*

> *"Teachers already have a full plate. So I think honestly, just by us going to them. It lightens their load so much more, you know."*

> *"I feel like it is hard to recruit teachers sometimes in the beginning because you were supposed to get them to sign up for our program in like September, and there's so much going on there and in their lives, because they're starting new classes and everything…And I think the way that our organization and the program is set up where we bring in all the materials, and teach the lessons ourselves is helpful, because I think there's less commitment that has to be made on the teacher."*

Several of the educators at KFTB also have classroom teacher experience and can speak accurately on this topic. KFTB takes it upon itself to directly reach out to schools for partnership opportunities, sending follow-up emails and contacting different members of the staff. They have specific roles dedicated to outreach, which can help facilitate this process. Their staff has to be prepared to step up and take the lead in the OEE in order for it to be accessible to under-staffed and under-resourced schools.

Adequate funding

In terms of accessibility, funding was naturally the most heavily emphasized point. KFTB depends on grants and the generosity of funders and donors in order to waive fees for under-resourced schools, provide all of the materials needed for lessons, and continue to function.

> *"Often I feel like the school is able to cover that [fee]. If they're not, then we do give them the option to waive it. Because we want to make it as accessible as possible."*

> *"So being able to have that financial freedom is really important… I hate to say it, but money is what makes the world go round."*

> *"But there's always necessary things that you just have to do for the funding that I do think can take away from our teaching at certain points, but [are] just necessary."*

Interestingly, the restrictions on content and reporting requirements were also brought up in conversations about funding. Because KFTB's funding comes from a variety of grants with different requirements around curriculum and measurable outcomes, much of the educators' energy must also be directed to completing these reports and reapplying for funding in order to keep their program accessible.

Connection to everyday, lived experiences

Most of the educators mentioned the importance of meeting kids where they are at and validating their experiences with the environment. The educators brought up how necessary it is that the curriculum be tailored to the actual lived experiences of the students. This is especially true in the context of working with under-resourced schools who largely serve BIPOC students with a variety of cultural traditions.

"Content [that is] more geared towards what students are experiencing in their day to day."

"A lot of things that might foster nature connection come from really expensive things like summer camp or outdoor hobbies, like skiing or going on a boat or something. It's just really important to be like, you can go outside and appreciate it and be amazed. There's living things everywhere, even in really urban environments… there's ways to be connected to that."

"What I try to do is just when I'm meeting a class for the first time, almost just like gauge, where they are at… I think that everyone has a connection to the environment in some way or the other, whether they recognize it right off the top of their head or not."

The educators at KFTB seem to employ an asset-based approach to education, which is a culturally relevant pedagogy that is based on the cultural realities of students and the strengths that they bring to the classroom (Borrero and Sanchez 2017). This allows students to "contribute their lived experiences as they relate to the curriculum topics" (Ellington and Prado 2024). Students in these programs can see the effects of environmental issues first-hand, especially those near the refinery in Richmond, CA. If an asset-based approach is applied in OEE, students can explore their different connections to nature positively, as assets instead of deficits.

Developing interest

Table 5. Predetermined and emergent themes and subthemes regarding sustained interest

Sustained Interest	*Self-efficacy*	*Agency and autonomy*
		Role models
		Learning by teaching
	Outcome expectations	*Improving the lives of non-humans*
		Collective action achieves more
		Being outdoors is fun and enjoyable
		Fairness
	Setting goals	*Eco-pledges*

As we continue to face the climate crisis and acknowledge that pro-environment behavioral changes are needed for a sustainable future, understanding applied environmental psychology has become more crucial than ever (Sawitri et al. 2015). The variables of the Social Cognitive Career Theory (SCCT) can help explain how to develop adolescent interest in sustainable careers, and sustained interest in the environment as work tends to bridge the gap between the individual and society (Međugorac et al. 2020). The formation of these three variables (self efficacy, outcome expectations, and goals) is preceded by learning experiences that inform them (Međugorac et al. 2020).

Self-efficacy

KFTB offers numerous ways for self-efficacy to be developed in its programs. Many examples of educators promoting students' ability to successfully perform a task and develop their confidence in outdoor settings.

Agency and autonomy. One way that educators at KFTB promote self-efficacy is by promoting students' agency over their own learning. This connects closely to my previous discussion of inquiry-based learning in that it empowers students to take the matter of their learning into their own hands. Educators provided examples of giving students this agency and autonomy by using empowering statements, allowing them to take risks comfortably, and making goals achievable:

> ***"****Something that we try to emphasize with our programs like, everyone is a scientist. And so, even though you're a kindergartner or first grader, you're gonna get to try too, we're gonna explain to you how you're gonna do this."*

> *"Allowing for those different levels of engagement and inviting that, so just not saying any one way is wrong or right, and everyone has their own way of exploring and learning about things."*

> *"We don't have control over everything. But we do have control over our relationship to the world."*

KFTB's motto: Everyone is a Scientist, is a seemingly simple way to encourage self-efficacy, but can be instrumental in students' visualization of success. Reassuring students that their methods of exploring and learning are neither right nor wrong helps dissipate fear of failure. Explaining to students that prioritizing your own connection to the world, before attempting to tackle larger environmental issues, can make these issues seem less overwhelming and much more manageable.

Role models. Self-efficacy can be further developed through the use of role-models that can model behavior for students. Educators brought this up regarding modeling enthusiasm, technical skills, and respect for non-humans:

> *"That's where I think also that helps create a deeper connection for the students, because they see that [personal interest] within the person that's teaching them, that this person is obsessed with these things."*

> *"So then I'll do a demo for them: how we're gonna look for invertebrates…and also a lot of conversation around, 'We wanna be super gentle with them. We're always gonna make sure we put them back where we found them because this is their habitat.'"*

Learning by teaching. Another way that self-efficacy can be developed is by encouraging students to share what they know with others. Having the confidence to teach someone something is a good indication of self-efficacy. Educators provided examples of students teaching others both through the program's design and of their own volition:

> *"We always tell them like the first lesson, the last step to being an environmentalist is being an environmental leader, sharing what you know with your community. And so we do that in different ways, like through posters or art, or a play."*

> *(A student's words) "'I took my family there after our field trip, and I showed them where the crabs live.'"*

Participation in OEE programs with strategies like KFTB's can help students develop self-efficacy. Instances in which their interpersonal, intellectual, and physical skills and competence are promoted can lead to higher-self perceptions of their academic, social, emotional, and physical selves (Fang et al. 2021), which suggests that OEE programs take the aforementioned design elements into account.

Outcome expectations

Several types of outcomes were brought up in my conversations with the educators. OEE programs that aim for environmental specific outcomes can also produce personal and interpersonal outcomes (Ardoin et al. 2017). Most of the outcomes fall under the broader categories of changes in behavior or disposition, as opposed to knowledge or competencies (Ardoin et al. 2017). This suggests that sustained interest in the environment requires OEE that moves beyond knowledge acquisition and into students' relationships and interactions with the environment.

Improving the lives of non-humans. This outcome expectation is a result of behavior that reduces threats to wildlife. Through trash clean-ups with KFTB, students are exposed to the dangers that pollution can impose on wildlife and can develop biospheric concerns. Plastic and trash audits help them understand how the action of preventing or cleaning up trash that makes its way into the local watershed can improve the lives of the non-human beings in the environment:

> *"I think that even just giving them something where it's like, you know, like, yes, this is one small thing that we're doing. But it's still important. It means that there are this many animals who aren't gonna be affected by the pieces of trash that you all picked up today. And that's important."*

> *"Like, you may not be impacted by this pollution. But our animals are. And you know a lot of the times it's not really us that are in trouble. It's things around us that are in trouble."*

> *"Specifically, we talk about the harmful effects on wildlife."*

Collective action achieves more. This outcome expectation is a result of social competency and engaging in behaviors that emphasize teamwork and collaboration. It is an example of altruistic concern. Students can expect to achieve more when working together than when working alone, and their disposition towards group work can be improved with a common objective:

> *"I'll always pause there and be like, was she able to do this on her own? And they're like, "No." And I was like yeah, like, what does she have to do? They're like, oh, her neighbors had to help. They all had to fight together."*

> *"I think in a classroom, a lot of the time, like, they're waiting for instructions. And then like, they know, like, someone will come to them ... But like outside in a bigger space, I feel like they're more like the group work goes better. Like they're trying to figure things out as a team."*

> *"I want them to understand, like the power of collective help, or just, like, the power that they will soon be able to have."*

Being outdoors is fun and enjoyable. This outcome expectation is based on students' disposition towards being outdoors. Educators shared that the impressions of their OEE experiences, rather than the specific content and vocabulary, are what students tend to remember. Therefore, it is critical that these impressions are positive ones:

> *"How much fun they had outside… is what I'd want them to remember."*

> *"So I feel like having a good combination of heart and brain is really important in outdoor education because kids are, you know, very impressionable. They're not always gonna remember what you say to them. But they're gonna remember how you made them feel."*

> *"I think [being] outside fosters a lot of excitement, just generally like a lot of energy. And, like playfulness, that's sometimes hard to do in a classroom."*

Promoting the idea that spending time outdoors is enjoyable also involves dispelling any fear that might be preventing students from engaging with the environment and lesson content. This can be done by modeling direct contact with nature and by engaging with it with a scientific inquiry lens:

> *"So like just normalizing this connection to nature, I felt like like that was like a huge moment I felt like, and just all of a sudden the students went from like screaming and afraid of this thing to be like, oh, like I can look at this more closely and like, can I touch it if she's touching it? And so people started touching it."*

Fairness. Multiple educators brought up this outcome expectation as a favorable way to frame environmental issues for children. Outcome expectations play a role in Fairness Theory, which helps explain "when authorities should be held accountable for unfavorable events" (Colquitt and Chertkoff 2002). The educators suggest that students expect fairness. When this expectation is not met, students can recognize that issues of procedural justice have occurred:

> *"Something that I think that kids always understand is the idea of fairness. So something that we kind of bring up is like, everyone doesn't have access to clean water. That's not fair."*

> *"They're always really into issues about fairness… We show this video that's about environmental justice and… they're able to be really empathetic and understand, and they're like, 'Yeah, that's not fair.'"*

These outcome expectations are important factors in the SCCT because for pro-environmental behavior to occur, students need to believe that their choices can help achieve sustainable outcomes (Međugorac et al. 2020). Outcome expectations are the moderators between beliefs and behaviors. They help students think critically about the consequences of their actions, and KFTB's educators help frame these consequences in a positive way: if students perform a certain environmentally friendly action, then conditions will improve. Positive and varied expected outcomes combined with high self-efficacy judgements can lead to setting challenging goals for themselves (Sawitri et al. 2015).

Setting goals

The third variable of the SCCT that I explored in my conversations with the educators was goal-setting. These goals are promoted by favorable views of self-efficacy and outcome expectations (Međugorac et al. 2020). This suggests that it is appropriate to set the goals at the end of the program, and that educators can support ambitious goal-setting by intentionally promoting self-efficacy and positive outcome expectations throughout their lessons and outdoor experiences with the students.

Eco-pledges. In KFTB's curriculum, goal-setting is explicitly done at the end of programs. Students are given the opportunity to externalize their goals by writing them on a pledge card that they then display next to their classmates' pledges.

> *"We get to do this pledge tree in class, and they'll get to do a pledge leaf and make their little environmental pledge on their leaf."*

> *"We have pledge cards, where at the end of a program, we give them this card that's like, 'I pledge to'... and they vary a lot by student."*

Educators emphasized that the pledges vary a lot, but that most of them relate to actions about reducing waste, e.g. littering less and picking up trash. Although they believe this is a step

in the right direction, they'd like to see more pledges relating to their connection with nature or their role as scientists. These student-set goals are a good way for OEE programs to assess if they are achieving their intended outcomes and students are experiencing the key takeaways.

Educators' Role in Inspiring Sustained Environmental Interest

My central research question aimed to assess how OEE educators aim to cultivate early and sustained interest in the environment. OEE is an important tool in creating life-long stewards of the environment, but in practice it can be difficult to plan and measure sustained interest. This is why asking the right question in the first place is important: in order to be able to fully address sustained environmental interest, we need longitudinal studies that talk to actual students to determine the effectiveness of OEE. However, learning is a two-way street and educators are just as vital in the process. Insight into the people who are in the most critical position in this field, the environmental educators themselves, is crucial to making OEE experiences meaningful and effective in establishing that bond with the environment. By having a diverse staff of educators with the agency to weave their own passions into their work, a curriculum that centralizes sensory- and place-based education, prioritizing partnerships with under-resourced schools, incorporating students' lived experiences into the lessons, and providing opportunities for students to develop self-efficacy, positive outcome expectations, and set goals, OEE programs can intentionally set students on a path towards long-term environmental consciousness. However, it is not enough to set intentions, and assessing students' attitudes must be done before being able to make any definitive statements about the long-term effectiveness of OEE programs. That being said, educators at KFTB are making a tremendous effort to improve environmental literacy and attitudes, with clear intentions to inspire a life-long commitment to environmental consciousness.

Limitations

For the purpose of better understanding educators' views on OEE, my experimental design was adequate. However, several limitations may have impacted the inference of my findings. Understandably, it was difficult for interviewees to speak on how their students were

reacting to and processing the content. Interviewing educators alone is not adequate in understanding how sustained interest can be motivated. Additionally, my narrow focus led to my study population being four employees at one singular organization, so their answers may have been hindered by the knowledge that though their answers would be anonymous, their identities may still be discernible. Regarding accessibility, geographically, we are in a unique region with access to a wide range of ecosystems, so the varied experiences of educators at this organization might not be possible at others. I am familiar with many of the locations that the educators' brought up, and was able to ask follow-up questions based on what I knew about them, but I would not be able to do this if I was interviewing educators at an organization with an unfamiliar geography. Despite this, the case study provided valuable context to the field of OEE and transferable recommendations to other organizations looking to conduct similar experiences.

Future directions

One of the most salient future directions in OEE research is looking at it from the opposite perspective: the students. Further research and conversations with students who participated in OEE at an early age is necessary, no matter what their current professions are, so we can identify patterns in the OEE experiences they were exposed to. The curriculum and pedagogies of educators at those organizations should be examined for similarities. It is also necessary to continue having conversations with experienced educators in the field, at diverse types of OEE in diverse settings. This can help identify which core components of OEE are being used across different contexts and how they are useful. Elevating the voices of educators with diverse backgrounds, who perhaps did not have the same OEE experiences in their youth, is essential to broadening the perspectives in the field. Lastly, actually assessing the interventions themselves by doing classroom/OEE observational studies is important for establishing a common understanding of what makes OEE effective. This can help generate standardized learning goals that can be achieved with flexible approaches, and a common purpose for OEE educators and programs to strive for.

Broader implications

One educator I spoke to greatly emphasized how young children are growing more disconnected from nature and need programs like KFTB that can help facilitate interactions that create positive attitudes towards the environment. Amidst constant distractions and quick answers at their fingertips via the internet, it is still important for kids to ponder what they are seeing around them, and there must be room for a productive struggle to occur where they are not only allowed, but encouraged to ask questions and investigate. Immersive, experiential education, like KFTB, is necessary for these interactions to occur.

Educators in this field are often enthusiastic, but face many challenges. This is evident in my discussion with educators about their future plans. All of them emphasized a desire to continue working with youth, but some mentioned how exhausting the role can be and how much of a toll it can take: both physically and mentally. They discussed their own fears and feelings of climate doom, and how aware they are of inadvertently passing on any pessimistic views that they hold. Changing the discourse around the societal value of educators is a necessary but immensely challenging task. If we want OEE educators to be equipped to handle the tall task of inspiring environmental stewardship in future generations, they must be well-trained, receive competitive salaries, and have access to resources that support their own well-being and dignity. This involves a collective shift away from neoliberal views of educators that are restrictive and aim only to produce economically productive students. This starts with having a diverse workforce that is continually learning through collaboration and professional development. This study aims to show how educator narratives can be a useful tool for such development.

In my research, I aimed to help fill the gap on the intentions behind OEE and how its curriculum supports the development of long-term interest in environmentalism. The insights provided were invaluable in providing inspiration for OEE programs and educators to be more intentional about their approaches and goals. Students must gain a better understanding of how they see themselves in relation to the natural world, and this is facilitated by those in OEE educator positions. Sustained interest cannot be attributed to a single action or phrase by an educator, so we must view OEE as an ongoing collaboration of educators that help provide a moral education to students participating in their programs. With pedagogies and approaches that

specifically aim to cultivate lasting interest, there is a great deal of potential for the participants to take what they learn from OEE and carry it into their future endeavors.

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APPENDIX A: KIDS for the Bay Theory of Change Concept Map