International Explorations in Outdoor and Environmental Education 12

Jan Činčera · Bruce Johnson
Daphne Goldman · Iris Alkaher
Michal Medek *Editors*

Outdoor Environmental Education in the Contemporary World

Springer

International Explorations in Outdoor and Environmental Education

Volume 12

This series focuses on contemporary trends and issues in outdoor and environmental education, two key fields that are strongly associated with education for sustainability and its associated environmental, social and economic dimensions. It also has an international focus to encourage dialogue across cultures and perspectives. The scope of the series includes formal, non-formal and informal education and the need for different approaches to educational policy and action in the twenty-first century. Research is a particular focus of the volumes, reflecting a diversity of approaches to outdoor and environmental education research and their underlying epistemological and ontological positions through leading edge scholarship. The scope is also be both global and local, with various volumes exploring the issues arising in different cultural, geographical and political contexts. As such, the series aims to counter the predominantly "white" Western character of current research in both fields and enable cross-cultural and transnational comparisons of educational policy, practice, project development and research. The purpose of the series is to give voice to leading researchers (and emerging leaders) in these fields from different cultural contexts to stimulate discussion and further research and scholarship to advance the fields through influencing policy and practices in educational settings. The volumes in the series are directed at active and potential researchers and policy makers in the fields. Book proposals for this series may be submitted to the Publishing Editor: Claudia Acuna (Claudia.Acuna@springer.com).

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ISSN 2214-4218 ISSN 2214-4226 (electronic)
International Explorations in Outdoor and Environmental Education
ISBN 978-3-031-29256-9 ISBN 978-3-031-29257-6 (eBook)
https://doi.org/10.1007/978-3-031-29257-6

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Series Editors' Foreword

A mantra for environmental education from the 1970s was that it was education *about* the environment, *in* the environment, and *for* the environment. As Annette Greenall (now Gough) (1978, p. 9) argued,

> The most effective place for teaching about the environment is in the environment. Experiences in the environment give the best basis for developing awareness of the interrelationships between man [sic] and his [sic] environment, concern for the general quality of life, and a commitment to the principles of environmental conservation.

An American Geological Institute poster from around this time proclaimed, "THE REAL CLASSROOM IS OUTSIDE *get into it*" (in Greenall, 1978, p. 10). The distinguishing characteristic of environmental education was that it educated *for* the environment, whereas outdoor education was seen as being more focused on adventure activities *in* the environment. Although outdoor and environmental education were seen as having different goals, and were sometimes in tension, their respective goals did overlap in a number of aspects. For example, Andrew Brookes (1989, p. 15), distinguished outdoor education from other educational pursuits, including environmental education, by "its physical and conceptual isolation from schooling. Conceptual isolation provides the opportunity to construct powerfully affective forms of de-schooled environmental education".

In the early part of this century, the field of "Outdoor Environmental Education" (OEE) emerged simultaneously, and perhaps independently, in many different countries, and this was reflected in academic journals (see, for example, Harrison, 2010; Stewart, 2008; Thomas, 2005). More recently, volumes in this series have discussed this field (Stewart, 2020; Thomas et al., 2021; Jukes, in press), and this edited collection is a timely and important contribution to the growing acceptance of the term which signals a significant shift away from an outdoor education that is focused chiefly on adventure and personal/group development, although there is no consensus. For example, Daphne Goldman and Iris Alkaher (in Chap. 2) discuss the history of outdoor education and environmental education as separate fields and argue for OEE as a "contemporary form of environmental education in which the outdoors provides a setting conducive for meaningful teaching and learning in environmental

education", though others in this volume have different interpretations. For example, Michael Paulsen (in Chap. 6) criticises mainstream ideas about OEE, particularly "the unquestioned sharp distinctions between culture/nature and indoors/outdoors", and discusses two different understandings of OEE that go beyond the conventional distinction between in/out.

Outdoor and environmental education – both as separate disciplines and as OEE – have long suffered from being marginalised in policy and funding discussions. In Chap. 1, Jan Činčera recounts his meeting with an influential politician who questioned why environmental education centres should be supported from public sources, and why the teaching of subjects situated *outside* of the formal education structure should be supported. These are not new questions. It seems that outdoor and environmental educators have always had to argue for the importance of outdoor experiences as part of formal education. School science educators have also long had to fight hard to be able to take students out of the classroom to undertake ecological and other biological field studies. This situation has been exacerbated by costs (for buses, camps, equipment, etc.), and because of safety concerns (as discussed by Brookes (2018) in another volume in this series), teacher workload issues, disruptions to the school timetable, and competition for space in an overcrowded curriculum, where every moment is seen as needing to be in the classroom for learning to happen. More recently, following the COVID-19 pandemic school lockdowns and the associated switch to online learning precluding outdoor experiences, teachers now seeking to leave the classroom are finding it increasingly difficult to organise. As a result, there is a shift towards accepting that the sharp division between society and nature is artificial, and accepting a view of OEE as encompassing the outdoor, indoor, and virtual dimensions of our being-in-the-world. This may not satisfy those who subscribe to Richard Louv's (2008) notion that children are developing nature deficit disorder, but it does take into account children's immersions in virtual worlds.

It is difficult to speak of OEE in universal terms, and the diversity of practices and foci that can comfortably co-exist in this field are exemplified in this volume. In Chap. 20, Jan Činčera discusses this range of practices as spanning from being a tool for nature protection to being more concerned with moving society towards sustainability (see Table 20.1). Chapter authors in this latter group argue that

> OEE should be a transformative force challenging contemporary society and providing a more meaningful alternative based on non-anthropocentric, non-dualistic, and wild-oriented approaches. Profound social transformation is needed to remedy the human–nature relationship; such a process calls for transformative learning that is not compatible with the current dysfunctional educational system.

This broader vision is related to Sustainable Development Goal 4's focus on quality education, and particularly Target 4.7:

> By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development. (United Nations, 2015)

The more recent UNESCO initiative, *Reimagining our futures together: A new social contract for education*, the 2021 report from the International Commission on the Futures of Education, is probably even more related. This report recognises the need for transformation of the education system and argues that "Teaching should be further professionalized as a collaborative endeavour where teachers are recognized for their work as knowledge producers and key figures in educational and social transformation" (p. 4).

This volume presents the voices of scholars that span a range of cultural, geographical, and political contexts and draws on a great wealth of experience across a diversity of practices. It is this diversity that makes this volume attractive. While some chapters discuss programs and concepts that will be familiar from other writings – such as Bruce Johnson's focus on Earth Education, Karen Malone's discussion of childhoodnature, and Bob Jickling, Marcus Morse and Sean Blenkinsop's discussion of wild pedagogies, and Paul Bocko, Simon Jorgensen, and Aziza Malik's discussion of place-based pedagogies, in Part II. The case studies in Part III describe projects that may not be so familiar to readers, but whose narratives have the potential to create the space for readers to negotiate and reflect deeply on the nexus between theory and practice.

It is increasingly being recognised, as the UNESCO Future of Education website asserts, that "With accelerated climate change the fragility of our planet is becoming more and more apparent" (https://en.unesco.org/futuresofeducation/initiative). Such recognition makes the need for outdoor environmental education in formal education more urgent. The arguments presented in this book provide a sound base for engaging in making the dream a reality.

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Acknowledgments

The book has received support from the project “Výzvy udržitelné společnosti optikou humanitních a sociálních věd” [The Challenges of a Sustainable Society from the Perspective of the Humanities and Social Sciences] (MUNI/A/1460/2021).

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Chapter 1
Introduction

Jan Činčera

Sometimes, interesting coincidences happen. When I was working on this book, I got a call. My friend from the Ministry of the Environment invited me to a policy meeting. An influential politician opened the meeting with the question of why we should support environmental education centers from public sources. Isn't it redundant, given that we have a strong network of well-functioning public schools? Why should we support teaching of subjects situated outside *of the formal education structure?*

In the Czech Republic, we have a long tradition of outdoor environmental education (OEE). Nevertheless, should this tradition be the main reason for providing continuous support? There must be other reasons as well.

When we started putting together this book, we felt that we need to examine the challenges for environmental education, and its branch, OEE in particular, in the dynamic twenty-first century. Meanwhile, global pandemic and a landgrab war shaking international stability and cooperation happened, adding more urgency to our efforts.

From our perspective, we have prepared a publication on the value of OEE and why it should be supported. Perhaps, we have also prepared a book on what needs to be discussed in our field so that we have more persuasive answers to the policy-makers like the one I mentioned. The text provides case studies reflecting how OEE succeeds, transforms, or fails.

We started as a team representing three countries: the Czech Republic, Israel, and the United States. Soon, seven other countries came onboard: Australia, Belgium, Canada, Denmark, Mexico, the United Kingdom, and Taiwan. The authors

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_1

live in different parts of the world, which have different traditions and conditions for OEE. However, the questions we have to deal with seem to be shared. How should OEE evolve to meet the needs of this new post-COVID-19 world? How can it learn from its tradition about what to keep and what to change? Together, we try to find at least some answers and stimulate thinking around ongoing questions.

Reconnecting children and young adults to nature is a recurring theme of EE. Many authors emphasize the diminishing opportunities for children to experience nature and the importance of connecting to nature in learning to respect and care for the environment (Chawla, 2020; Harvey et al., 2020; Louv, 2008; Sobel, 2017; Gill, 2014).

The centrality of outdoor experiences in developing the cognitive, affective, and behavioral components that enable and motivate people to care for the environment has been repeatedly stressed (Chawla, 2020; Palmer et al., 1998; Ward Thompson et al., 2008). A large body of research supports the importance of educational programs that provide young students with the opportunity to experience outdoor settings. More and more frequently, outdoor environmental education programs (OEEPs) are being used in EE and offered in natural areas and open spaces around the world.

The benefits of OEEPs have been reported in numerous studies. According to these studies, OEEPs can have a positive effect on the students' connection to nature (Andrejewski, 2011; Frantz & Mayer, 2014; Braun & Dierkes, 2017; Mullenbach et al., 2019), concern for the environment (Chawla, 2020; Palmer et al., 1998; Stern et al., 2008), sense of place (Austin et al., 2009), and attitudes toward nature and wildlife (Dettmann-Easler & Pease, 1999; Smith-Sebasto & Cavern, 2006). In addition, residential OEEPs are likely to develop students' interpersonal skills, self-concept, self-confidence, and locus of control (Neill & Richards, 1998).

The pandemic situation in 2020–2021 and consequent lockdown in many countries all over the world have reignited the question of the future of OEE. Many programs were cancelled and a massive shift to online education was needed. Basic assumptions had to be questioned and OEE had to adjust to the contemporary situation. Rethinking the future possibilities within the OEE field has become unavoidable (Quay et al., 2020). In light of this, OEE must re-interpret both its current practices and its theoretical foundations to find ways to meet the challenges of the changing world. This book tries to fill this—still mostly unexplored—lacunae by providing insights from OEE scholars and practitioners.

In this edited volume, we explore some of these fundamental questions. What is the role of OEE in the contemporary society? The book analyzes, from theoretical and empirical perspectives, why OEE is important for developing students' environmental citizenship competences. It discusses the various approaches that exist in the field and identifies some of the opportunities and challenges of OEE, particularly in this time of growing digitalization and the accompanying distancing between people and nature. This is done by offering both cross-cutting overviews of the field and concrete case studies presenting particular approaches and programs. We invited a collection of international experts to meet diverse aspects of the theory and practice

of OEE as well as tried to reach a diversity of approaches and geographical perspectives.

The book is organized into three sections. The first section, "Outdoor Environmental Education in the Contemporary World" looks at OEE through the educational lens, critically exploring the different aspects related to OEE's contributions to education. Within this frame, the section explores OEE as a means for enabling meaningful environmental and sustainability education (ESE). OEE's cognitive, affective, physical, social, and behavioral educational benefits are considered both theoretically and based on insights gained from a growing number of research studies. Progressive educational pedagogies such as OEE have theoretical and practical implications for a variety of stakeholders, including policymakers and for multiple aspects related to the teaching–learning–evaluating process. Overall, as an opening for the following sections, this section aims to provide a critical view of OEE both as a current form of ESE and as a progressive form of teaching–learning.

In Chap. 2, Daphne Goldman and Iris Alkaher summarize the development of outdoor education (OE) and environmental education (EE) as initially distinctive but closely related educational movements. They discuss several social–environmental factors and educational theories laying the grounds for linking OE and EE. Moreover, the authors argue that the features of OEE contribute to its promise as progressive, transformative education for cultivating environmental citizenship.

In Chap. 3, based on a literature review of recent publications on OEE policy, Dafna Gan, Iris Alkaher, Nirit Assaf, Naama Lev, and Naama Gur-Lavie analyze international policies related to OEE. This chapter discusses the different motives and purposes of policymakers for embedding OEE in educational systems in different countries, such as developing students' health and well-being. Additionally, the chapter identifies several gaps between the policies and their implementation as well as some of the differences among competing educational policies.

In Chap. 4, Michael L. Lengieza, Rosemary Aviste, and Janet K. Swim link OEE with psychological research. The authors focus on the concept of connectedness to nature. This chapter reviews relevant literature on the psychological understanding of the antecedents of connectedness to nature and points to potential applications of this knowledge in the context of OEE.

Chap. 5 deals with the assumed benefits of outdoor learning which make OEE attractive for teachers. Sofie Heyman, Toon Janssen, Wanda Sass, Nele Michels, Jelle Boeve-de Pauw, Peter Van Petegem, and Hans Keune analyze the effect of the outdoors on students' health and learning. The authors summarize an extensive body of research, asserting that OEE has positive effects on students' performance and well-being, including nature connectedness, mental health, stress reduction, and ability to concentrate.

In Chap. 6, Michael Paulsen seeks to explore and envision radical OEE that goes beyond the inside/outside distinction, and he re-situates and re-embeds education as such in the earthly life critical zone. This chapter provides a novel and fascinating perspective on OEE, the deconstruction of the distinction between indoor and

outdoor education, and between the inside and outside, which could profoundly change the theory and the practice of the field.

The second section of this book, "Approaches to Outdoor Environmental Education" compares various pedagogical approaches that exist in the field of OEE. The section provides theoretical explanations and insights gained from practice and empirical study in several pedagogies strongly associated with OEE: Earth education, place-based education, forest schools, wild pedagogies, childhoodnature, environmental interpretation, and environmental socialization. Each chapter includes a vignette of the approach in action.

In Chap. 7, Michal Medek presents an overview of environmental interpretation. The chapter then describes its distinctive methods and their development over time. The text also confronts the thematic approach with voices critical to its mechanical application in the process of program development that might take the participants out of focus.

In Chap. 8, Bruce Johnson describes the development of the Earth education approach. He examines its framework and structure, including a vignette of one program in action, and reviews the research literature. As this approach has been continuously developing for more than 50 years, Johnson also reflects on the changes the approach has experienced to meet the needs of the changing social context.

In Chap. 9, Paul Bocko, Simon Jorgenson, and Aziza Malik explore the place-based education approach that emphasizes linking schools with their communities. The authors provide multiple examples of how this approach is implemented in various settings, and they share the successes and challenges experienced by the practitioners in each setting.

Chap. 10 examines the concept of forest schools that can be considered both self-evident and confusing. In this chapter, John Cree tells the story of forest schools in the United Kingdom. He discusses the effects and the shortcomings of the approach and provides a case study illustrating its practice.

In Chap. 11, J. Joy James and Robert D. Bixler focus on the environmental socialization process. They investigate how people become comfortable in outdoor settings. Based on their research, they discuss the main principles of such a socialization to be implemented in OEE.

In Chap. 12, Bob Jickling, Marcus Morse, and Sean Blenkinsop introduce the relatively new wild pedagogies approach. They discuss its background and its influences, challenges, and considerations. Furthermore, they explore the key theoretical ideas upon which the wild pedagogies approach is based and the key ideas linking its theory with practice. They also include a vignette of practice that highlights how wild pedagogies can provide reimagined relationships within a more-than-human world.

In Chap. 13, Karen Malone introduces a sympoietic approach to outdoor encounters, the concept of childhoodnature. This approach is based on recognizing children as ecologically congruent and learning to live and die together with a host of others on a damaged Earth. The approach is underpinned by

post-human theories and post-anthropocentric pedagogical approaches that invite children, educators, and parents to think deeply about child–outdoor–nature encounters.

The third section of this book, "Outdoor Environmental Education as a Worldwide Phenomenon" presents case studies of selected OEEPs from around the world that deal with different socio-cultural and environmental settings. The selected examples provide a snapshot of OEE practice in the Czech Republic, the United States, Canada, Mexico, and Taiwan, thus offering a global perspective covering several continents.

In Chap. 14, Jan Činčera and Michal Medek describe a case study illustrating how OEE programs can develop students' understanding of the nature of science, which is so essential in times of disinformation. Additionally, this chapter briefly touches on other topics, such as the application of digital technologies in outdoor programs and the use of the emancipatory approach that provides students with an opportunity to shape the program through their own decisions.

In Chap. 15, Sean Blenkinsop, Jodi MacQuarrie, and Clayton Maitland present a case study of a radical, buildingless, outdoor-all-the-time public elementary school on Canada's West Coast, the Maple Ridge Environmental School. The question driving this initiative was how to ecologize education and change culture. This chapter starts with a short introduction to the school itself, its founding principles, goals, and continuing educative work. It points out several ongoing challenges and responses to those and a few key learnings and successes.

In Chap. 16, Paloma A. Valdivia-Jiménez, Peggy Turk-Boyer, Nélida Barajas-Acosta, Christine Flanagan, Debra Colodner, and Angeles Y. Sánchez-Cruz share their experience with OEE programs managed by The Intercultural Center for Study of Deserts and Oceans in Mexico's northern Gulf of California. Their case is a success story of how their outdoor programs have evolved in step with worldwide trends in best practices, diversifying in method, audience, and focus.

Chap. 17 shares a similar story, but with a different ending. In this chapter, John McKillop describes a unique Canadian environmental leadership program for high school students, The Bronte Creek Project (BCP). Unfortunately, after 40 years of enormous success, the program was canceled. The chapter summarizes the reasons for establishing this project as well as for eventually canceling it and discusses the project's broader context and implications for the OEE field.

In Chap. 18, on the example of a case study from the Republic of China (Taiwan), Yun-Hsuan Chiu describes how OEE may respond to the specific needs of animal protection. The case study provides an essential perspective on an area that represents the roots as well as the future of OEE: addressing peaceful coexistence between human and animal populations.

In Chap. 19, Jan Činčera returns the focus of the book to the Czech Republic. The chapter discusses an example of the Pulchra program that combines the traditions of place-based education, education for environmental citizenship, and inquiry-based learning. Additionally, the chapter deals with issues such as how to run an OEEP in lockdown times, how the outdoor, indoor, and online learning

environments may be merged, and how to find a balance between the emancipatory and teacher-centered approaches.

And finally, what is it all about? In the conclusion: New ways for outdoor environmental education in the post-COVID world. We harvest the themes that have emerged throughout the book. We attempt to answer the question we are often asked, which is the same question we often ask ourselves: What is the place and role of OEE in the twenty-first century?

We wish you an interesting and inspiring read.

Acknowledgments The chapter has received support from the project "Výzvy udržitelné společnosti optikou humanitních a sociálních věd" [The Challenges of a Sustainable Society from the Perspective of the Humanities and Social Sciences] (MUNI/A/1460/2021).

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Part I
Outdoor Environmental Education in the Contemporary World

Chapter 2
Outdoor Environmental Education: Grounding a Tradition Within Environmental Education

Daphne Goldman and Iris Alkaher

2.1 Introduction

A central role and challenge of contemporary education is facilitating individuals to acquire and develop the life competences to ensure environmental sustainability and promote sustainable lifestyles (UN, 2000, 2015). This chapter is written while humanity is struggling to adapt to the overwhelming challenges imposed by the COVID-19 pandemic, which epitomizes the complexity, turbulence, and unpredictability of life in the current world. The chapter aims to ground outdoor environmental education (OEE) as meaningful education that enables developing the competences and resilience necessary for adapting to, achieving well-being, and living rewarding lives in such environmentally, socially, economically and politically challenging and stressful conditions (EC, 2019; Krasny & Tidball, 2009; Sterling, 2010).

Outdoor education (OE) and environmental education (EE) developed as separate educational movements (Smith & Knapp, 2011), each in response to specific challenges, as reflected in distinctive goals and attributes, but also as close areas sharing some overlapping content and educational pedagogies. The first section of this chapter looks at these two fields from a historical perspective highlighting their dynamic nature reflected in the evolution of the understanding of OE and particularly EE. While these educational movements may have developed differently in

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_2

different socio-economic-geographic contexts, some central international developments are evident in the literature. These do not necessarily represent evolution that occurred worldwide. The second section brings into focus several challenges facing contemporary society and confronting EE identified as factors significant in the linking between EE and OE. It then presents selected learning theories associated with both EE and OE, which, parallel to the challenges facing contemporary society, provide a pedagogical grounding for OEE. The final section ties OEE to the more recent concept of 'environmental citizenship' which is essential for promoting sustainable societies. The chapter concludes by identifying some ongoing practical challenges confronting OEE as a model of progressive education in a contemporary world.

2.2 Outdoor Education and Environmental Education: A Story of Dynamic Fields

According to Neil (2008), OE "refers to a range of organized activities that take place in predominantly outdoor environments for a variety of purposes" (p. 5). He cautions against strict definitions since conceptualizations and practices of OE differ in different cultures and local conditions, thus the understanding of OE is "relative to time and place" (p. 6). Within this broad field, Neil (2008) mapped classifications of OE programs according to their purposes: Recreational & Physical, Therapeutic, Educational (subject knowledge, academic self-concept), Developmental (personal and social development, life skills), and Environmental (environmental knowledge, attitudes, and behavior). This chapter looks at OE from the Educational, Environmental, and Developmental frames, the latter relevant to realizing the educational and environmental goals.

It is generally agreed that OE emerged in the mid-twentieth century as an educational approach that does not focus on content area but rather the educational process, specifically where meaningful education can take place, namely utilizing the natural and manmade surroundings as means for achieving teaching-learning goals of different curricular subjects by enabling direct experiences and contextual learning in the outdoor environment (Smith & Knapp, 2011; Tal, 2012; Woodhouse & Knapp, 2000). Accordingly, OE is applicable to any content that can be more effectively taught and learned via firsthand experience in relevant out-of-class settings (natural, manmade). The schoolyard, field trips, field study, nature centers, residential camp programs, have been traditionally recognized outdoor learning environments and continue to be central settings for outdoor learning. However, in an increasingly urbanized world, urban nature and open spaces in cities, zoos and aquariums, museums, or any manmade built environment (e.g., factory, waste-treatment site, electric plant) that provides effective learning settings for the topic under study are increasingly identified with OE (Lavie Alon & Tal, 2017).

From its emergence, understanding of the essence of OE has expanded, evident in several of its definitions and goals. Julian Smith, in the 1940s defined OE as "…education in and for the outdoors", which emphasizes using the outdoors as a 'laboratory' to complement teaching in the classroom for learning activities that can be more effectively conducted in the outdoor settings, but also teaching skills necessary for healthy outdoor pursuits (Smith, 1960). In the late 1980s, following establishment of the field of EE, the definition expanded to "… education in, about and for the out-of-doors" (Ford, 1986, p. 2), reflecting the place, the focus, and the aim of OE. *In* informs that OE may happen in any out-of-class setting. *About* informs that the focus is the outdoor context and learning addresses the relationships within the natural environment and between human societies and the environment. *For* addresses the aim, referring to the importance of comprehending humanity's dependence on the natural environment and, consequently, appreciating it (Ford, 1986). Ford's definition reinforces the role of the affective domain. This definition of *in, about* and *for* echoes one of the early definitions of EE. Lucas (1973, 1979) framed EE as education *in* the environment, *about* the environment (addressing the cognitive domain of understanding and skills) and *fo*r the environment (preserving the environment). More currently, the definition of OE was expanded to include *throug*h (Bunting, 2006, p. 4), implying that the involvement in activities in the outdoor (e.g., natural) environment aims to enrich different learning contents, provide interest, and contribute to making them more easily understood.

Hence, while OE is acknowledged as one of the antecedents of EE (Braus & Disinger, 1998; Stevenson et al., 2013), contemporary writing on OE indicates that once the field of EE emerged, understanding of the essence of OE expanded to include EE, as reflected in the more recent definitions of OE that specifically link it to EE. We claim that this association between contemporary OE and EE results from a combination of the challenges facing education in an era of global environmental-social crisis and the educational philosophies identified effective in educating citizens for such a reality (elaborated further on).

EE emerged in the late 1960s as a distinct field addressing human-nature interrelations aimed at educating people to develop as environmentally responsible citizens. EE is identified with terms such as developing individual's environmental literacy, environmental citizenship, and sustainability citizenship (e.g., Barry, 2006; Cao, 2015; Goldman et al., 2015; Hadjichambis & Reis, 2020; Hollweg et al., 2011; Sarid & Goldman, 2021). From its conception in the 1960s, despite contested ideas regarding the characteristics of EE (Wals, 2009), it is agreed that education aimed at cultivating these qualities in individuals needs to incorporate three domains: the cognitive, the affective and the behavioral. Accordingly, the focus of EE is enabling individuals to comprehend the complex inter-relationships among the environmental, social, economic, and political dimensions that characterize sustainability issues; fostering the emotional attributes that enable and motivate individuals to "translate" their understanding into actions and behavior; and providing opportunities for engagement in these behaviors.

It is beyond the scope of this chapter to provide a comprehensive review of EE encompassing the many lenses through which it is addressed in the literature (e.g.,

different social-geographic perspectives, relationship between theory and practice, what research teaches regarding the effectiveness of different approaches), or the debate around the shifting terminology associated with this field (e.g., education for sustainable development, education for sustainability, environmental and sustainability education). For this book, which focuses on the association between EE and OE, we look at how the understanding of the nature of EE has evolved since its emergence. This framing offers better grounds for linking EE and OE. We do not presume to exhaustively address the numerous, equally appropriate descriptions of EE, but rather a sampling that highlights development in two major fronts: (1) how environmental issues confronting society are understood and conceptualized, and (2) transition in the educational approaches perceived best suited for conducting effective and meaningful EE.

Early descriptions of EE are the highly cited definition of Stapp et al. (1969) and the goals of EE endorsed in the Belgrade global framework for EE and the Tbilisi Intergovernmental Conference on Environmental Education (UNESCO, 1976, 1978). These early depictions reflect the educational response to the increased focus of the scientific community on ecological issues of the environment: environmental problems are perceived mainly through a scientific-oriented lens as problems to be solved by science and technology; an enlightened, motivated, and responsible public, via education, is crucial for the success of environmental policies. While the role of a responsible involved citizenry in achieving environmental protection, and of EE in facilitating this, are not contested, these early conceptions of EE have been subject to critique by several education thinkers (e.g., Bonnett, 2006; Gough, 2013; Palmer, 1998; Sterling, 2009; Wals, 2011). They reflect the grounding of EE within the scientific domain and positivist paradigm (Palmer, 1998), translating into a behavioristic, transmissive, instrumental, and teacher-oriented approach to education (Sterling, 2009; Wals, 2009). It is critiqued that these early definitions emphasize achieving environmental sustainability and not human development, thus, they undermine the essence of education (Jickling & Wals, 2008; Wals, 2009, 2011). It is argued that this early thinking about EE reflects a linear causality and knowledge-oriented approach by which providing people with the necessary knowledge will lead to more pro-environmental attitudes, which, in turn will lead to more environmentally responsible behavior; an assumption that much EE research does not support (e.g., Kollmuss & Agyeman, 2002; Marcinkowski et al., 2013; Yavetz et al., 2009). Another critique is that situating EE within the science domain inherently links it to science education, which is viewed as a main umbrella for incorporating environmental content, whereas EE should be a component of educating all citizens (Gough, 2008; Parra et al., 2020). Furthermore, the capacity for addressing environmental aspects not directly related to science, or educating for values, within the framework of science education have been questioned (e.g., Gough, 2002, 2008).

Descriptions of EE from the late 1980s–1990s reflect how development in environmental issues are conceptualized. An example is the North American Association of Environmental Education interpretation:

> A process of helping individuals understand the environment, their place in it, and related issues. It is a lifelong process through which persons can develop the knowledge, skills, and commitment necessary to live compatibly with nature, act equitably toward each other and future generations, and make informed and forward-thinking decisions. Environmental education envisions and promotes a society peopled by strong, effective, and environmentally literate citizens who are capable of and inclined toward democratic participation, cooperation, creativity, and responsibility (Archie & McCrea, 1998).

Without ignoring the role of knowledge, skills or commitment components, this conception of EE resonates the holistic, multi-dimensional comprehension of environmental issues reflected in the concept of sustainable development (Brundtland, 1987). By underscoring the linkage among problems in the ecological dimension and social, economic, and political dimensions, this concept brings to the front of environmental discourse notions concerning the human condition such as social equity and environmental justice, multiculturality, environmental rights and obligations, and intergenerational responsibility. In the absence of expressions such "protect and improve the environment" or "solving environmental problems", paralleled by inclusion of terms such as democratic participation, cooperation, and creativity, the NAAEE description expresses a more constructivist, transformative and emancipatory educational approach to teaching-learning in EE. This evolved conception of EE is also identified as education for sustainability (EfS) or Education for sustainable development (ESD):

> …a vision of education that seeks to balance human and economic well-being with cultural traditions and respect for the earth's natural resources. It emphasizes aspects of learning that enhance the transition towards sustainability including citizenship education; education for a culture of peace; gender equality and respect for human rights; health education; population education; education for protecting and managing natural resources; and education for sustainable consumption (UNESCO, 2005).

EfS and ESD are seen as major ways to address the environmental crisis by engaging the community; they aim to empower individuals and communities of all ages to assume responsibility for creating a sustainable future and developing environmental stewardship. Taking this further, Wals directly articulates not only emphasizing the pedagogical justification of EE but also the environmental justification:

> Environmental education is viewed as a means to help individuals, groups, and communities to develop their own pathways to sustainable living, whereby sustainable living is something to be determined contextually in an open-ended, participatory process…the emphasis lies on educating people and not persuading, influencing, or manipulating them toward a predetermined and expert-determined way of thinking and behaving which supposedly is to lead toward a healthier planet…Education here refers to a carefully prepared, planned, and guided learning processes during which knowledge, values, and action competence (head, heart, and hands) develop in harmony to increase an individual's or a group's possibilities to participate more fully in life and society (Wals, 2009, p. 110–111).

This contemporary perspective of EE aligns with the role of education to develop autonomous thinking by focusing on capacity building and critical thinking that enable individuals to raise critical questions concerning "what is going on in society" and determine autonomously how they should act (Jickling & Wals, 2008; Wals, 2009). This view of EE is also culturally sensitive and socially inclusive, reflecting current understanding that cultural diversity is a driver of sustainability (Capra & Luigi Luisi, 2014; UNESCO, 2002, 2015).

This brief historical look at EE in the 50 years since its emergence highlights the evolution this field has undergone: (1) from the environmental perspective: transition from a narrow lens focusing on environmental quality via the science-oriented domain to a holistic understanding of environmental issues as multidimensional, involving complex interactions among environmental, social-cultural, economic and political factors, and thus straddling the natural sciences, social sciences and humanities; (2) from the pedagogical perspective: progression from a positivist, instrumental approach to an emancipatory, learner-centered, critical, and transformative approach.

EE is confronted with significant challenges arising from a combination of related factors: the nature of sustainability issues, the nature of EE as the educational response to preparing citizens to function and thrive in such a reality, and how to incorporate and implement such education given the current reality of many Western education systems. To a significant extent, these environmental-social, educational, and political challenges are key factors in linking EE to OE. The following section looks at several of these challenges and what OEE offers to addressing them. It then presents selected educational pedagogies inherent to OE and acknowledged effective in achieving the goals of EE, thus providing pedagogical grounding for OEE.

2.3 OEE: Linking EE to OE

2.3.1 Contemporary Challenges of EE

The twenty-first century presents individuals and societies with overwhelming challenges: How to live and thrive in an industrialized, technological, and urbanized world? How to cope with increasing environmental-social problems associated with such as world, such as climate change and recurring pandemic diseases, necessitating responsible and ethical decision-making an integral component of our daily lives? How to operate in the face of change and uncertainty? People are confronted in their daily lives with highly complex and poorly defined situations that often have several incompatible solutions, involve multiple stakeholders with diverse and often competing value systems and interests and, consequently, different views regarding what the problem at hand is. These challenges are further confounded by factors stemming from the increasingly multicultural contexts of current societies. Such

complexities raise crucial questions for EE as the type of education accepted for cultivating resilient individuals equipped to live well and have fulfilling lives in such a reality. Following are several factors that contribute to the increased acknowledgment that the outdoor settings are beneficial to EE's response to these challenges.

Disconnect from Nature

In an increasingly urban, industrial, and technological world, people, including children, spend most of their time indoors, significantly less time outdoors and, consequently, are losing connection with the natural world. Indoor lifestyle is also associated with the Net generation (Walter, 2013). This issue is extensively addressed in the literature (e.g., Kesebir & Kesebir, 2017; Louv, 2005; Orr, 1992), reflected in introduction of terms such as 'nature deficit disorder' (Louv, 2005) and Biophobia (or nature phobia) (Olivos-Jara et al., 2020; Soga et al., 2020) into environmental and EE discourse. These terms highlight implications of this human-nature disconnect, which often manifest in fear and anxiety of being in nature, alienation from nature, repulsion, and other negative perceptions of the natural environment. Literature supports that contemporary environmental issues are strongly tied to this disconnect from nature, going as far back as the ecologist Leopold (1949) who claimed that when people do not feel they are part of the "land" and regard it from an instrumental perspective as a commodity, they disrespect it and lack concern for environmental degradation, leading to its abuse. Literature emphasizes that developing 'connectedness-to-nature' is a key factor in cultivating environmentally responsible behavior (Chawla, 2020; Liefländer et al., 2013; Mayer & Frantz, 2004; Nisbet et al., 2009). Along this line, studies indicate that accumulating direct positive experiences in natural environments and creating a sense-of-place is crucial for developing positive emotions regarding the environment, such as empathy, respect, and care, which are key to motivating commitment to the environment and embracing environmentally responsible behavior, especially when this entails tradeoffs at the personal level. An insight of researchers is that connecting people to nature should commence in early childhood; indeed, one of the tenets of early childhood EE is providing regular opportunities for direct contact of children with natural environments (e.g. Davis, 2010; Samuelson, 2011) to develop empathy to nature as a foundation for later commitment to protecting the environment (Chawla, 2009, 2020) parallel to the development of healthy (physically, mentally and socially), competent children (Davis, 2009).

The relevance of human relationships with nature and of creating a sense-of-place through direct contact with the natural environment for addressing environmental challenges confirms the role OE in achieving meaningful EE.

OE has traditionally focused on rural contexts – bringing nature into schools and getting students out to nature.With increasing urbanization there is growing

awareness of the importance of the urban environment as a learning environment for OE. Urban nature, urban open spaces such as parks, river parks and green belts, and other urban landscapes provide an alternative to natural environments.

Culture-Related Challenges
A central challenge is the increasingly multicultural nature of societies worldwide. This requires an educational agenda supportive of engaging culturally diverse participants. Multicultural Education, put forth as such an approach (Banks, 2016), refers to teaching in and about cultural diversity. The major goal of multicultural education is creating educational systems that provide equal opportunities and experiences for students from diverse ethnic, racial, and social-class groups and expose learners to the diverse cultural-based perspectives (Banks, 2016).

The increasing multicultural nature of societies worldwide brings into play diverse norms, traditions, beliefs and behaviors, and different understandings and perceptions regarding human-nature relationships. Thus, addressing cultural and ethnic diversity is crucial for EE. UNESCO (2002, 2015) identifies culture as an enabler of sustainable development and includes cultural diversity a dimension to address within the framework of the 2030 sustainable development goals. Despite this, the cultural dimension still receives less attention in EE practice (e.g., Alkaher et al., 2018; Negev & Garb, 2014; Nordström, 2008). Careful attention is required to provide equal opportunities for culturally diverse groups to participate in EE and contribute to environmental discourse (e.g., Goldman et al., 2019; Rodriguez & Lee, 2012). In practice, marginalized cultural groups, which are often more exposed to environmental problems (Marouli, 2002), are frequently disregarded or underrepresented in public discourse and decision-making processes around these issues, which are largely determined by the dominant social groups. Engaging culturally diverse groups in EE requires characterizing the multicultural settings in-depth and identifying the challenges these settings create in educational contexts. It is beneficial to adopt an approach that is not only respectful of all people and their cultures but acknowledges cultural diversity as a resource and utilizes it toward richer and meaningful environmental-social learning (Capra & Luigi Luisi, 2014; UNESCO, 2002). Integrating environmentally sustainable practices associated with traditional lifestyles of indigenous peoples can contribute to achieving resilient communities; the importance of traditional ecological knowledge in informing the science of environmental management, conservation, and sustainable utilization of natural resources is increasingly acknowledged (Uprety et al., 2012).

Learning outdoors offers rich opportunities for incorporating the multicultural approach in EE, especially when these settings are multicultural themselves and thus provide an authentic learning environment illustrating how multiculturality plays out in reality. Natural environments also provide the opportunity to explore

the relationships of different cultures to these environments and investigate issues affecting these places from the different viewpoints originating in the different cultural perspectives.

Challenges Arising from the Nature of EE

The inherent attributes of EE bring in several challenges for incorporating it within the educational system and curriculum:

1. Sustainability issues are multi-dimensional – they link among environmental, social, economic, and political factors. Moreover, these issues are systemic – they are interdependent and cannot be fully understood in isolation. These attributes situate environmental issues at the interface of natural sciences, social sciences, and humanities; they cannot be fully comprehended or addressed through separate disciplines (e.g., Capra & Luigi Luisi, 2014; Goldman & Sarid, 2021; Orr, 1992). A challenge arising from EE's holistic and interdisciplinary nature is how to integrate it within a disciplinary-oriented education system, which is the reality of many Western education systems.
2. EE deals with normative questions that, by nature, involve values, and seeks to enable value-guided [behavioral] change (e.g., Činčera et al., 2020; Jickling & Wals, 2013; Goldman et al., 2021). Values education, in the context of EE, is highly debated, reflecting, among else, tension between advocating certain values or educating for values (Činčera et al., 2020; Wals, 2009; Wals & Jickling, 2002). Contemporary EE embraces the latter and associates values education with critical education; a critical approach and developing a critical consciousness is central to EE for developing autonomous thinkers based on critical reflection (see previous section). Thus, while fostering environmental values is an explicit aim of EE, the debate concerns how to achieve this. Confounding this, incorporating education that adopts a critical approach regarding dominant social norms (cultural beliefs and practices) within education systems that do not encourage critique of the existing social order presents a challenge. Centralized education systems do not exist in a political vacuum and are often viewed as tools in strengthening existing norms. This places constraints for teaching controversial issues (e.g., Goldman & Sarid, 2021; Ho & Seow, 2015; Jickling & Wals, 2013; Sterling, 2009).
3. EE, differing from most other school subjects, involves human behavior – developing the individual's capacities and tendency for environmentally-responsible action, (Stevenson et al., 2013). Discourse around this attribute reflects a debate similar to that concerning values, namely the tension between indoctrinating and empowering, concerning the educational approach to achieving this end.

The outdoors provides a meaningful learning environment for looking at multidisciplinary issues since it represents the authentic situation in all its complexity and multidimensionality. Directly experiencing authentic situations supports exposing and exploring values, and emotional involvement. The complexity embodied in these authentic situations reveals conflicts, tensions and dilemmas that can activate emotions and stimulate constructing a personal position regarding the issues at hand, and through this contribute to exposing personal values and critically inspecting them. Experiencing authentic settings encourages student involvement and active learning via the exploration of the real-world issues (e.g., climate change, pandemics and other health concerns, ocean degradation, consumer culture, sustainable agriculture and food systems, dietary preferences, biodiversity loss), forming and practicing of solutions. These contribute to cultivating agency in environmentally responsible behavior. Together, these indicate that the outdoor environment is conducive for implementing progressive educational approaches such as those endorsed by contemporary EE and elaborated in the second section chapters of this book.

2.3.2 Situating OEE in Contemporary Educational Theory

The challenges presented above raise questions regarding pedagogies that may be effective in enabling meaningful EE and achieving its goals. Several pedagogies inherent to OE are significant for EE in view of its holistic, value-laden, and action-related nature. These provide theoretical and practical educational grounding for OEE.

Experiential Learning
OE is grounded in *experiential learning theory*, a philosophy of learning informed by constructivism. It is based on the idea that learning happens when learners use hands-on, task-oriented activities and relate previous knowledge in a contextual way to real-life examples (Beard, 2018; Kolb & Kolb, 2012). It emphasizes the value of learning by doing – direct experience and focused reflection of the learners on their experiences. Experiential learning asserts the combination of the direct encounter with the phenomena being studied and reflecting on the experience. Kolb's experiential learning model (Kolb & Kolb, 2012) is a recursive cycle of concrete experiencing (doing, having a concrete experience), reflection (reflecting on the experience), generalization (learning from the experience by forming abstract concepts), testing (active investigation in new situations), which itself is an experience for reflection. Contrary to transmissive learning, in experiential learning the direct contact with the reality under study, employing multi-senses, stimulates the learner's intellectual, emotional, and physical involvement. Through this transformation of experience, the learner actively creates and re-creates knowledge.

Experiential learning is foundational for OE (Smith & Knapp, 2011). Experiencing environmental-social issues through direct contact with the authentic environment (natural or manmade) is essential for meaningful EE – learning that influences the individual's attitudes, personality, and behavioral decision-making (e.g., Motschnig & Cornelius-White, 2012; NAAEE, 2010; UNESCO, 2017). This overlap is reflected in the goals of experiential learning specified by the Association for Experiential Education "to increase knowledge, develop skills, clarify values, and develop people's capacity to contribute to their communities" (AEE, 2012), which echo EE's goals. Activating and engaging the affective domain are enhanced in experiential learning, and this is crucial for motivating personal action. Experiential learning in EE contributes to developing the participants' sense-of-efficacy, sense-of-accountability, social skills and problem-solving skills along with satisfaction, and sense of accomplishment. It nurtures the individual's sense-of-belonging and awareness of what is going on. Together these motivate the desire for agency. These individual, social, and environmental advantages of experiential EE underscore the significance of OEE.

Place-Based Education (PBE)

PBE is grounded in learning within the actual places and communities where the students live to make explicit the connection and relevance of the content being learned to the students' lives. It aims at making the local social-cultural, political, economic, and environmental phenomena, occurring outside the classroom, the students' learning experience. PBE is associated with cultural studies, nature studies and real-world problem solving that involves students in decision-making around authentic social-cultural, economic and managerial issues (Smith, 2002, 2007). It shares practices and aims with other educational reforms such as constructivism and experiential learning, multicultural education, critical pedagogy (Greenwood, 2008), and emancipatory education (Činčera et al., 2020). Rich literature has accumulated on PBE by prominent thinkers (Greenwood, 2008; Smith, 2002; Smith & Knapp, 2011; Sobel, 2004). It is acknowledged as an effective means for overcoming the school – daily-life disjuncture: by enabling individuals to connect with their place (physical and social), and through this develop a sense-of-place (place-identity), PBE provides an antidote to the disconnection and alienation associated with post-industrial societies in which people are losing attachment to nature, their environment, and their communities (Sugg, 2013). Many researchers agree that culture, ethnicity, geography, race, gender, socioeconomics, and socio-political situations, which are part of PBE, play a considerable role in shaping environmental perspectives (Greenwood, 2008; Smith, 2002, 2013; Sobel, 2004). This highlights the relevance of PBE for developing the individual's environmental and social responsibility.

Taking this further, Greenwood (2008), in his 'critical pedagogy of place', synthesizes place-based discourse with critical pedagogy discourse, which specifically addresses social justice issues by challenging dominant power relations and resulting cultural norms reflected in

(continued)

mainstream education. In this synthesis, by looking at how economic and political decisions impact the places where people live, place also becomes a critical construct. "Place-based educators believe that education should prepare people to live and work to sustain the cultural and ecological integrity of the places they inhabit" (Woodhouse & Knapp, 2000, p. 4). Tying this into Greenwood's 'critical pedagogy of place', a central justification for adopting PBE is providing learners with the knowledge and experiences necessary to actively participate in democratic processes. The escalating environmental-social challenges associated with a technological and increasingly urban world, and post-COVID-19 reality make place-based outdoor EE even more important.

It is clear that discourse on PBE, like other progressive educational approaches such as contemporary EE, forces thinking about the true aims of education in contemporary western societies: "are schools a tool for producing workers and consumers, or should schools be a vehicle for nurturing democracy and community?" (Sugg, 2013, p. 56). The chapters in section two of this book take a deeper look into this critical question for education.

'Forest School' Education is a distinct form of OE that evolved from place-based education in Europe in the mid-twentieth century[1] as a grassroot educational movement to address increasing frustration concerning the children–nature disconnect and increasing awareness of the importance of outdoor experiences to the healthy development of young children and their individual and social wellbeing (Davis, 2009; Tuuling, Õun and Ugaste, 2018). It was originally developed for pre-school education and more recently is expanding to include elementary school-level children. Forest school employs the outdoors as the curriculum and not just a place; the outdoors is viewed as a flexible learning environment providing diverse possibilities for experiential learning (O'Brien, 2009). In this constructivist approach, children make meaning through interaction with the environment and with each other. The Forest school approach is based on several principles, including: (1) learning in the natural environment is regular and repeated as opposed to sporadic encounters which characterize much outdoor learning; (2) Children have the freedom to select their activities according to their interests, and are encouraged to play and explore using resources from the natural surroundings to support their development as independent and creative learners; (3) Suitable risk-taking is viewed as part of the learning process to develop the children's' confidence, self-esteem, and resilience (Forest School Association, 2020; Knight, 2009).

[1] The 'forest school' movement emerged originally in Scandinavia in the context of early childhood education, expanded to the United Kingdom in the 1990's and is expanding worldwide.

In addition to learning about the environment, forest school education, especially with young children, cultivates the many cognitive, affective, physical, and social attributes that are crucial developing as environmentally sensitive and engaged individuals.

Contemplative Pedagogy is an educational pedagogy based on contemplative practices that developed in Western and East-Asian traditions (Ergas, 2015) that is gaining interest in public education, including EE discourse in (Pulkki et al., 2017). This new direction reflects increasing critique regarding western-oriented curricula that emphasize acquisition of external knowledge about the world (i.e., focus on "out there" information) and rarely look at the "in me" processes and feelings, and seeks to shift emphasis to focusing on oneself, gaining access to oneself, and cultivating a consciousness of oneself in relation to the world (Ergas, 2015). In the context of EE, the focus on "out there" and lack of attention to "in me" runs the risk of leading to a state-of-mind of detachment; alienation of the individual from oneself extends to alienation from one's environment, a key factor in environmental degradation (see above. 2.3.1). By cultivating awareness and mindfulness of the body and its senses (the 'lived-body'), contemplative pedagogy can contribute to nurturing the capacity for intrinsic valuation – concern for the well-being of non-human organisms and nature necessary for caring about the environment (Pulkki et al., 2017) and may contribute to overcoming current alienation of people from their environment.

Individuals are challenged by the conflict between non-materialistic values associated with EE (e.g., modesty, compassion, sensitivity, care) and the materialistic realities and fast living that characterize modern western lifestyles (e.g., consumerism culture, fast-food, rapidly changing trends). Contemplative practices, through cultivating and strengthening the individual's spirituality and inner well-being and providing a source of meaning and purpose for life, offer an alternative to materialism as a source of contentment and purpose, and therefore, offer a means to bridge the well documented behavioral gap related to environmentally responsible behavior.

While not specifically identified with OE, contemplative pedagogy ties into OEE. Proponents of this area claim that parallel to enabling multi-sensory experiences of children and youth in nature, it is necessary to cultivate their ability to "calm down, to focus, to clear their consciousness, to compassionately notice and care" (Pulkki et al., 2017, p. 3) so that the experience in nature is realized to its full potential. Moreover, the outdoors, especially nature in all its richness, offers diverse places in which to practice contemplative exercises.

Additional Areas Relevant to OEE

Additional pedagogies are increasingly recognized for their contribution to effective EE. One of these is **Citizen Science**, which connects among science education and environmental education. It provides opportunities for the general public to work with scientists and engage in addressing environmental-social issues relevant to their local community. Since monitoring and data collection activities focus on local environmental issues, much of citizen science occurs outdoors. From an EE perspective, public participation in such inquiry-based actions is increasingly acknowledged as a means to cultivate the public's consciousness of sustainability issues and environmental citizenship (Bonney et al., 2014; Peter et al., 2019; Wals et al., 2014).

It is well accepted that social and emotional skills are required for facing the challenges of unsustainable human actions (Olsson, 2022). Students, as future citizens need to acquire knowledge while examining their attitudes and skills necessary to manage their emotions. This includes dealing with uncertainty, problem solving, developing empathy and compassion for others, maintaining positive relationships, and making responsible decisions (Omasta et al., 2021; Pinchumphonsang & Chanchalor, 2020). **Social Emotional Learning** (SEL) is an educational method that aims to foster social and emotional skills as part of students' learning and the school curricula (Neth et al., 2020). The aim of ESD to transform "[…] the way we think and act" (UNESCO, 2017, 1) through cognitive, socio-emotional and behavioral learning, is adequately in line with the aims of SEL. Therefore, using SEL as part of EE programs, including OEEPs, is beneficial.

2.4 OEE in the Contemporary World

2.4.1 OEE and Environmental Citizenship

The significant environmental-social challenges facing humanity in the twenty-first century are influencing the essence of citizenship; environmental issues are increasingly framed in terms of citizenship (Cao, 2015). An effective 'Environmental citizenship' (EC) is crucial for addressing global and local environmental issues and promoting societies empowered to adopt sustainable ways-of-living, sustainable businesses, technologies, and economies and to promote sustainable policy towards achieving SDGs (Cao, 2015; Capra & Luigi Luisi, 2014; Dobson, 2007; Hadjichambis & Reis, 2020; UNESCO, 2015). A recent definition of EC put forth by The European Network for Environmental Citizenship states

> …Environmental citizenship includes the exercise of environmental rights and duties as well as the identification of the underlying structural causes of environmental degradation and environmental problems, the development of the willingness and the competences for critical and active engagement and civic participation to address those structural causes,

> acting individually and collectively within democratic means and taking into account inter- and intra-generational justice (ENEC, 2018).

This presents significant challenges for EE: how to equip individuals with the propensity to seek, and the ability to identify, the underlying structural causes embodied in modern society's social-cultural, economic, and political foundations? How to encourage and cultivate critical thinking concerning these structural causes? How to create the mindset that as citizens we have not only rights but also responsibilities? How to motivate the propensity for civic engagement? How to stimulate individuals of a neoliberal era, that values the individual over the collective, to look beyond self-interest and consider the welfare of society-at-large? How to reconnect people to nature in a world in which technology masks humanity's basic dependence on natural resources and has replaced people's connection to the natural world?

OEE is an instructional strategy conducive to facilitating the cultivation of these qualities in individuals, as elaborated above (Sect. 2.3.2). Experiencing environmental issues in their authentic settings allows learners to better understand the components (physical, social-cultural, economic, institutional-political) that comprise the issues and the interactions among them. Directly experiencing how factors related to the different stakeholders of an issue play out in-situ contributes to exposing the underlying structural causes. The physical, emotional, and social interactions that occur when learning takes place in authentic situations positively effect different dimensions of learning – cognitive and emotional. When students learn in the outdoors, they gain better understanding of the interactions that tie humans to their environment (and to other people) and appreciation for the natural world. David Orr (1992) views EE as education that prepares people to live well in a place without destroying it. The basic step toward achieving this is learning in that place itself.

2.4.2 Ongoing Challenges for OEE

This chapter closes by outlining practical challenges confronting teaching and learning EE in the outdoors and, more broadly, integrating outdoor learning in the school curriculum, since challenges confronting OEE often stem from issues related to outdoor learning in general.

Environmental issues play out in the real world that comprises the learners' lives, thus, for EE to be meaningful, it best be conducted in its authentic settings. From its emergence, learning 'in' the environment is inherent to achieving EE goals, but in reality, this presents immense challenges; thus, in practice, much EE is conducted in the classroom, is knowledge-oriented (learning 'about' the environment) and does not employ the outdoors as a powerful learning environment and teaching-learning resource. Several related factors underly this situation, some of these originate in the teachers, some in the students and some reflect logistic-institutional factors. These have been extensively addressed in the literature (e.g., Rickinson

et al., 2004), therefore we briefly sketch them organized around the actors (teachers and students) and logistic factors.

Actors – While the outdoors and natural environment provide powerful opportunities for meaningful learning combining minds-on (head), hands-on activities (hands) and emotional engagement (heart), this requires suitable preparation of teachers to fully realize these benefits. Although teachers acknowledge the importance of outdoor learning, research indicates a 'philosophy-reality gap' reflecting several barriers. Teachers report feeling intimidated by and hindered to teaching outdoors (Fielle & Nettles, 2017; Tuuling, Pun and Ugaste, 2018; van Dijk-Wesselius et al., 2020). Pre- and in-service professional development needs to develop teachers' competences in designing and executing outdoor teaching and cultivate a 'mindset' regarding the outdoors as a legitimate learning environment.

A challenge is shifting teachers' perception regarding their role in the teaching-learning process. Contemporary learner-oriented, constructivist approaches, including EE, OE and the pedagogies addressed in this chapter, identify the role of the teacher as a facilitator of a 'dialogue' between the student and the object of study. If challenging when teaching in the classroom, it is all-the-more difficult outdoors, since outdoor learning is student-oriented and experiential by nature, and the students have an active role in the learning process guiding their own learning. This presents a conflict for teachers who maintain conventional, instrumental teacher-oriented perspectives by which they are in control and learning is largely via teacher-directed classes. Teachers also voice a sense of need to organize and manage the students in the outdoors (McClintic & Petty, 2015; van Dijk-Wesselius et al., 2020).

A crucial aspect requiring sufficient preparation is developing the educators' pedagogical content knowledge (practical skills, didactical confidence, and expertise) for conducting learning activities out of the classroom. Low confidence in outdoor teaching expertise is indicated by teachers (Rickinson et al., 2004; van Dijk-Wesselius et al., 2020).

Another challenge is that the outdoors is largely associated, by students (Orion & Hofstein, 1994) and teachers (McClintic & Petty, 2015), with leisure activities and free time and not with learning, while the indoor classroom is viewed as the main site for learning. Additionally, for many students as well as teachers, the outdoors, in the context of learning, presents a 'novelty space' in three aspects: geographical (lack of familiarity with the physical environment in which learning is taking place), cognitive (preparation regarding the relevant content and skills) and psychological (gap regarding learning expectations from the outdoor learning experience) (Orion & Hofstein, 1994). This implies the need for careful planning addressing pre-outdoor, outdoor, and post-outdoor work, including suitable preparation of the students towards the outdoor component so that its educational value is achieved. It is often necessary to facilitate teachers to overcome their own perception of the outdoors as 'novelty space'.

The psychological aspect may also include the various manifestations of modern society's disconnect from nature, relevant for students and teachers. Teachers also need to be prepared to cope with student-related factors concerning outdoor learning, such as possible age difference in enthusiasm, resistance to learning in less

conservative frameworks, fears and phobias of nature, and diversity in learning styles as well as cultural diversity and students with special needs (Rickinson et al., 2004).

Another challenge is the importance of helping teachers develop a 'mindset' regarding the rationale and reason for learning outdoors and acknowledging it as 'real' teaching (Skamp & Bergmann, 2001). This is especially relevant in the context of EE. In view of the numerous practical challenges of teaching-learning outdoors, it needs to be the teachers state-of-mind not only that the outdoors provides pedagogical opportunities for learning, at large, but also that it is the most powerful and valuable learning environment for meaningful EE.

Logistic factors- Compounding these issues, OEE is confronted by various logistic and institutional barriers, as reflected by many teachers. Preference is commonly given to safety and health-related considerations and factors such as curriculum prerequisites, time and resource shortage, and teacher overload (e.g., Edward-Jones et al., 2018; Rickinson et al., 2004; Skamp & Bergmann, 2001).

These problems reflect a broader fundamental issue that outdoor learning, like many progressive educational movements, is still not recognized by many educational systems as a legitimate type of learning, is still rarely embedded in the curriculum and, consequently, has still not gained formal recognition as a valuable educational tool for EE. This underlying problem is what drives the two major lines of challenges: the logistic barriers to incorporating outdoor learning, and the barriers related to teacher training and preparation which needs to include outdoor learning as a core competence of teachers (van Dijk-Wesselius et al., 2020). Thus, a major challenge for the future of OEE is the mainstreaming of outdoor learning as a crucial type of learning in contemporary societies. Such a shift in educational policy will pave the way for overcoming the challenges downstream.

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Chapter 3
Is Policy the Whole Story? International Trends and Perspective in Policy Making and Enactment in Outdoor Environmental Education

Dafna Gan, Iris Alkaher, Nirit Assaf, Naama Lev, and Naama Gur-Lavie

3.1 Introduction

In the last two decades, children's lifestyle has taken place inside their homes and most often in front of digital screens (Hechter & Fife, 2019; Walter, 2013). They have also become increasingly separated from the outdoors as a place for leisure and adventure (Gill, 2011; Louv, 2010; Moss, 2012; Williams & Wainwright, 2016a). Children have lost the opportunity to explore their environment, despite studies advocating the importance of children's direct rapport with nature. Children should develop an emotional connection with nature and an understanding that humanity relies on it, and direct experiences with nature motivate activities relating to its conservation (Chawla, 2020). This distancing from nature is indicative of a gap we must narrow. Outdoor education, according to its broad definition, might offer a solution (Fiennes et al., 2015; Maher, 2018).

Outdoor education is not a new concept; it has been known worldwide for more than a century, and there are several studies that deal with policy related to it (Cook, 1999; Stott et al., 2015). Among the large number of definitions of outdoor education, for this review we adopted the following: Outdoor education allows learners to "experience the interdisciplinary nature of the real world through interactions with each other and the planet" (Dolan, 2016, p. 49). The National Association for Outdoor Education defines this concept as a "means of approaching educational objectives through guided direct experience in the environment, using its resources as learning materials" (Department of Educational Science, 1975: 1). According to this definition, outdoor education includes diverse disciplines such as geography, history, art, biology, environmental studies and physical education.

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_3

Dillon (2005) defines the setting of the outdoor classroom as "those spaces where students can experience familiar and unfamiliar phenomena beyond the normal confines of the classroom" (p. 10). They also refer to the outcomes of outdoor education, identifying them as "changes in thinking, feeling and/or behavior resulting directly or indirectly from outdoor education" (p. 10). They consider that these changes are a combination of the outdoor education itself and what happens in school and at home (Dillon, 2005).

Literature emphasizes the importance of outdoor education for students' cognitive, physical, emotional and social development (White et al., 2019). Many studies indicate that this type of learning supports the holistic development of students and offers them learning opportunities in a variety of fields that are not possible within the classroom (Maher, 2018; White et al., 2019). Learning that takes place outside of the classroom instills a multi-sensory experience (Henderson & Potter, 2001) that is imprinted in memory (Hodgson et al., 2008), is more engaging than traditional learning (Ho et al., 2015), and encourages interest and motivation to learn (Hodgson et al., 2008). When students are engaged in an outdoor activity that touches upon emotional and social aspects, their basis for learning is more solid, they express empathy towards environmental issues and, accordingly, develop pro-environmental perspectives (Chawla, 2020).

Although outdoor education has been recognized in policy agendas worldwide for many years (see for example, in England) (Cook, 1999; Marmot et al., 2019), to date it has not been well studied from the perspective of the gaps between policy and its implementation. Much of the literature has already recognized that international and national policies and guidelines of environmental education (EE) and education for sustainable development (ESD) do not necessarily include the approach and principles of outdoor education as an inherent part or a required way of developing learners' environmental citizenship. This is the case in pre-school education (Inoue et al., 2019) as well as in elementary and post-secondary school levels. Scotland in this sense is unique because it incorporates outdoor education specifically, in addition to its policy related to ESD (Bamber et al., 2016). It is also the case vice versa: not all outdoor education is equivalent to ESD. For example, many adventure-based outdoor education programs which involve traveling to remote nature places can be viewed as opposed to the sustainability agenda because they may not be based on nature protection (e.g., canoeing in protected areas and long-distance travel trips) (Waite et al., 2016). In addition, it is not obvious that young learners who experience nature-based learning in the outdoors will become more responsible for sustainability without an explicit focus on ESD. Critical pedagogies that focus on global environmental, political, social and economic problems and injustices are needed to make outdoor learning ESD-oriented (McLaren, 2015). This review focuses on this gap. It aims to identify and explore the interconnections between outdoor education and EE at the national policy level.

Policy refers to a process, a product or a text, as suggested by Stevenson (2013). In this study, we adopted the meaning of policy as a text, focusing on policies that are explicitly explored, described and discussed in recent peer-reviewed articles that deal with outdoor education. We also acknowledge G. A. Smith and Stevenson's

(2017) claim that although policy is often positioned at the state level, it is strongly influenced by global processes, such as economic globalization and neoliberal approaches to educational policies. The outcomes of such global influences have an impact on assessment and accountability, which both relate to outdoor education policy, as will be further discussed in this review.

The objective of this article is to review the body of empirical and theoretical research studies that focus on outdoor education policy and then identify and summarize current literature with reference to several central discrepancies or gaps concerning the implementation of outdoor education policies. Identifying these gaps, though not conclusive, has important contribution. For example, it can serve policy makers and implementors in the field in determining outdoor education policy. Here, we have related to the public education policy that is outlined by the state or national government whose responsibility is to determine the education system (Gray, 2018). In addition, the importance of the article is strengthened in light of the recent years of distance learning during the Covid-19 pandemic and the education system's accommodation of the situation. Learning outdoors during a pandemic can serve as an alternative to online learning, as was the case in many countries around the world.

3.2 Methodology

This literature review focused its search on post-2010 literature regarding outdoor education policy. This review is not a pure systematic review (e.g., Khan et al., 2003) nor a meta-analysis (e.g., Hattie et al., 1997) nor a comprehensive one (e.g., Chawla, 2020). Our assumption was that most of the relevant data will be available electronically, hence our search included only an electronic database. We acknowledge that non-electronic or pre-2010 literature publications may have been missed in our search. Although we are aware of the potential relevance of legislation of policy documents, for this review we used only academic peer-reviewed publications.

In all the publications, we searched the abstracts where the full e-copies were accessible. To conduct our search, we used the word "policy" combined with each of the following keywords: outdoor pedagogy, outdoor learning, out of school learning, wild pedagogy, outdoor teaching, outdoor play, wild learning, education for sustainability, environmental and sustainability education, and education for sustainable development. The search process, which was based on the database of Google Scholar, was conducted in several phases. Our initial search in the first phase yielded in total more than one million results, including duplicate publications.

To achieve a manageable number of publications to analyze, we filtered the high number of results according to the following criteria: the publication range (post-2010), the type of published work (peer-reviewed journal articles only) and a representation of different countries, from Western and Eastern cultures. In the third phase, we read the abstracts of the publications and checked how many times the

word “policy” was presented in each of them and whether policy issues in outdoor education were indeed the focus of these publications. In the final phase, we narrowed down the database to 30 publications that served as the data for this review and rechecked this final list to assure that they were all peer-reviewed articles, in which policy was the focus. We also identified several key authors who discussed policy of outdoor education (e.g., Paul Higgins, Sue Waite, Rowena Passy) and specifically searched for relevant publications they have written.

Our final list of publications includes empirical studies (mostly qualitative), and conceptual articles. The final reviewed articles represent Western countries (e.g., Australia, Canada, UK, USA), and Eastern countries (e.g., Indonesia, Japan, Singapore). We analyzed the final list of articles using a thematic analysis (Stott et al., 2015). The relatively short list of publications used in this review indicates the very restricted research on policy in the field of outdoor education. While much research has focused on the characteristics of outdoor education in theory and in practice, only a few have focused on its policy. Many of these are presented in this article.

3.3 Outdoor Education Policy Worldwide

Recognizing the value and necessity for combining outdoor learning in educational frameworks has increased over the years. Accordingly, different countries are taking action to define an official educational policy for outdoor learning (Gilchrist et al., 2017; MacQuarrie et al., 2015; Passy et al., 2019; Waite et al., 2016). This policy is fundamentally dependent on the local context (Waite et al., 2016). Differences in cultural, social, political, economic and other characteristics between countries create a variety of interpretations of outdoor education (Waite, 2020) and a diverse policy that is expressed by different objectives, motives and modes of implementation of outdoor learning in the education arena (Bentsen et al., 2017; Waite et al., 2016).

Our point of departure is that outdoor education is inherently part of education for sustainability (EfS) (Nicol et al., 2012; Smith et al., 2016) and part of ESD, when outdoor education is explicitly mentioned. To continue this, we can assume that policy related to EfS will include directions for outdoor education. However, due to the complexity and vagueness of its policy, outdoor education is usually not discussed explicitly. This is the case, for example, with the global policies related to United Nations’ sustainable development goals (SDGs). Although the SDGs are the strongest directive yet seen for sustainability education policy and practice (Sterling et al., 2017), outdoor education is not explicitly mentioned as a suitable guideline or practice. This situation illustrates the complexity of outdoor education as implemented in the field by different actors and the principles of outdoor education as they appear or should appear in relevant policy documents.

This situation is specifically reflected when closely examining the outdoor education policy in various countries. In the UK for example, the motivation for developing outdoor education emerged from the national appeal to decrease inequality in the public health arena (Marmot et al., 2019) by cultivating connections between personal and social skills within the framework of outdoor learning (Paterson et al., 2014). In another example from Scotland, outdoor education is supported by the curriculum for excellence: there are explicit guidelines for outdoor learning that are manifested in sustainability as well, and this is a professional requirement of all the teachers in the country (Higgins, 2019). Also in Indonesia, Japan, Nepal, Taiwan, Australia, Ireland, Poland, Spain, Switzerland and Canada, the outdoor education policy is anchored in the curriculum. In the USA, the policy tends to be state-wide and is motivated mainly by health perspectives (physical activity and healthy diet awareness) and science education (Bentsen et al., 2017). In Finland, where the recognition of the importance of outdoor education has increased among teachers and policy makers in the past decades, there is a guideline to make schoolyards suitable for learning spaces, as well as the natural and man-made areas on the school grounds (Higgins, 2019). In Sweden, outdoor education is implemented in schools, in higher education institutions and in environmental non-profit organizations (Backman, 2018). In Denmark, the policy advocates relevant learning in outdoor education contexts as well (Barfod et al., 2017). In Norway, outdoor learning is part of the national curriculum (Bentsen et al., 2017) in accordance with the idea of "friluftsliv" (which means a simple life in nature without destroying or disturbing it), according to which life outside the home is part of the local culture in the country (Gurholt, 2014).

3.4 Challenges from Theory to Practice: Discrepancies Between Education Policy and Its Implementation in the Field

There is a consensus among researchers of education policy that its implementation by educators in the field is a complex effort; greater than instituting the policy itself (Fixsen et al., 2005). Educators who implement outdoor education highlight its many advantages (Bentsen et al., 2017; Hodgson et al., 2008; Maher, 2018; Waite, 2020; White et al., 2019). However, in many cases policy makers believe that outdoor learning is not "real" learning in the traditional sense of the word (Higgins, 2019). There are several central discrepancies between the policy and its implementation. In the following section, we will address four gaps that relate to outdoor education policy that we identified in the thematic analysis based on the final list of publications we selected for this review:

3.4.1 Discrepancy Between Policy Makers and Implementation in the Field: Obstacles in Implementation

There are several studies that document gaps in the policy for outdoor education and its implementation in the field. Some of the reasons that teachers refrain from implementing outdoor teaching include teachers' perceptions of teaching processes and meaningful learning, their perceptions regarding the significance of outdoor education, their apprehension towards teaching outdoors that stems from lack of experience in teaching in the outdoor environment and, finally, lack of appropriate training. Consequently, there is a lack of teaching strategies that are suited for outdoor education (Gray & Pigott, 2018; Higgins, 2019; Waite et al., 2016).

For example, research conducted in Wales presented partial application of the outdoor education policy among children aged three to seven. Following the policy's implementation, teachers indicated that they had made more use of the environment, but it seemed only on a limited and partial level. Teachers went outdoors only when the weather was agreeable and then their teaching methods reverted to traditional methods used in the classroom. In addition, the teachers overlooked many learning opportunities that the environment offers and contributes to enhancing the students' learning. Reasons for which implementation was unsuccessful were difficulties such as the outdoor location, its size, its accessibility (O'Sullivan, 2018), lack of awareness of the uses and the underlying advantages of outdoor learning, concern for the children and the need to protect them from incumbent weather, accidents, and strangers (Smith & Stevenson, 2017).

Another study examined the developing awareness among policy makers in Australia, Denmark, England and Singapore. They found that in Australia, there were discrepancies in the outdoor education policies and their implementation, as well as differences in the statewide education bodies and the various states (Waite et al., 2016). It can be stated that teaching a curriculum that combines outdoor education in each state varies accordingly to the level of teachers' expertise, as well as their level of training. Furthermore, it was found that teachers are unsure of how to implement outdoor teaching (Waite et al., 2016).

3.4.2 Discrepancies Within the Education Policy: Promoting Achievement by Means of Testing as Opposed to Promoting Outdoor Education

One of the difficulties in implementing outdoor learning is an education policy that emphasizes achievement and studying towards national and international tests, which leaves outdoor education behind. This tests-culture trend extremely contradicts the promotion of outdoor education approaches in those countries, such as the USA (James & Williams, 2017), England, Australia (Smith & Stevenson, 2017) and

Israel (Pizmony-Levy, 2018), in which their current major policies and agenda is to improve their International Large-Scale Assessment achievements. This situation narrows the curriculum to focus on preparing for tests (Gan, 2021; James & Williams, 2017) and changes the position of EE in those countries. In the context of accountability and assessment, teachers who began implementing EE, including outdoor education, stopped doing so due to the stress on international and national testing, which mainly emphasizes literacy, math and science (Smith & Stevenson, 2017). Several examples reflect this gap. In England, it was found that teachers are faced with contradictory guiding principles; on the one hand, they are assessed according to the level of student preparation for these tests, and on the other hand, they are asked to implement meaningful and experiential learning (Smith & Stevenson, 2017).

In accordance with the approach which puts much of school effort on the promotion of academic achievement, in their review about EE policy in secondary schools in England, Glackin and King (2018) claim that EE provision in England is focused on content knowledge which occurs mainly indoors and fails to offer opportunities for students to gain various skills and participate in social and environmental citizenry activism. An additional study in Australia observed two schools in which outdoor education had been implemented as part of EE as a result of a supportive policy. In light of changes in the government, the policy was reformed in favor of a test-promoting policy. Despite the significant change, schools continued to promote EE that encourages outdoor education, while dealing with tests as well. The ability to address policy reforms is manifested in finding ways to implement the requirement for tests in an EE worldview. This process was challenging for both the teachers and the principals (Smith & Stevenson, 2017).

3.4.3 Culture-Based Gap: Outdoor Education Policy Facing the Cultural Characteristics of Target Audiences

An additional reason for the lack of success in implementing the outdoor education policy is that in many cases outdoor environment does not characterize the cultural identity of the teachers or the students. Teachers who do not feel a connection to their environment will refrain from teaching outside of the classroom (Smith & Stevenson, 2017; Waite et al., 2016). In Canada for example, outdoor education is affected by the cultural and geographical diversity that exists in the country (Maher, 2018) and includes a variety of perceptions towards the environment and the level of connection to it (Asfeldt et al., 2021). Considering its size, its multiculturalism and varied geographic landscape, outdoor education curricula in Canada is generally based on local perspectives; i.e., motivated by the skills and vision of the teacher on a local level (Henderson & Potter, 2001).

Looking at school curricula related to outdoor education is an interesting way to discuss policy texts. There are several examples of the culture-based gap in the

curriculum level. For example in physical education in the UK, critical curriculum theorists have argued for many years that student learning must focus on more localized and culturally responsive forms, and that a locality-sensitive set of experiences helps students to make meaning from what they have learned and make their learning more engaged. Physical educators also stressed that the existing curriculum is lacking in this sense (Tannehill & Lund, 2005; Kirk, 2010; Metzler, 2011). To address this issue, Williams and Wainwright (2016a, b) described an in-depth process of developing a new curriculum model for outdoor adventure education in the UK. The local culturally responsive guidelines that were developed in the new pedagogical curriculum model included several non-negotiable features: The first one, being mainly outdoors, reflected the recognition that learning in the outdoors should occur in the immediate locality of learners (e.g., the school grounds and buildings, local neighborhood or outdoor spaces surrounding the school) and should not be isolated many miles away from their home environment. Using residential outdoor centers, which had been the dominant option, should no longer be favored. In this way, by maximizing the learning potential of local environments, outdoor settings become more supportive of students' needs and abilities, and a stronger connection is made to local and accessible outdoor spaces (Wattchow & Brown, 2011; Beames et al., 2012).

A study in Canada explored similarities and differences in the outdoor curricula from different areas in the country. Though Canada has a long history of outdoor education, there is difficulty in defining an acceptable method for its implementation, while taking into consideration the country's large size, the sparse population, the various landscapes, and cultural diversity. Researchers have focused on describing the philosophical foundations, learning objectives and outdoor education curriculum from various locations in the country to obtain a deeper understanding of outdoor learning in Canada. Within the framework of the research, it was found that outdoor education in Canada is influenced by a combination of philosophies, including practicum, learning (or holistic learning) and traveling in the country. The common objectives were personal growth and building a community with situational awareness and environmental perspectives. The most prevalent activities included hiking, canoeing and kayaking, skiing and snowboarding (Henderson & Potter, 2001). Findings from the research, support previous research on outdoor education conducted in Canada; i.e., that outdoor education in Canada is motivated most often by teachers who seek it and not by a national curriculum (Hodgson et al., 2008), reinforcing Maher's claim (Asfeldt et al., 2021) that outdoor learning in Canada was influenced by the geographic and cultural diversity of the country's regions.

Culture can also be reflected in policy adoption between countries. For example, England borrowed outdoor learning policy as part of its forest school curriculum from Scandinavian countries, but without due consideration of cultural factors. In this example, it is difficult to implement outdoor learning when there is an emphasis on safety issues, which restricts government legislation, as is the case in England. This is in contrast with Denmark, in which risk does not influence outdoor education to the same extent. Moreover, the public media in the Scandinavian countries reflects their cultural attitudes towards nature more than in England. As a result, we

can assume that outdoor education policy will be implemented differently due to these cultural differences. More specifically, practice might translate differently in diverse cultural contexts (Waite et al., 2016).

From an organizational perspective, school culture could be considered as another cultural-oriented factor, which influences the implementation of policies of outdoor education. Recent studies that explored the gaps between policy and practice in governmentally certified eco-schools show that when the ideas of EE are inherent in school culture, school staff recognize it as a promoter for the implementation of outdoor education and feel more committed to it (Alkaher & Gan, 2020). For example, Harrison-Vickars (2014), who investigated the gaps between policy and practice concerning the implementation of school community gardens in Ontario, Canada, found that most of the eco-school teachers who participated in the study recognized school gardening as part of school culture and agreed that this supported the implementation of school gardens. This exemplifies how eco-schools, which are originally related to top-down policy in EE, developed bottom-up policy in the school, which was translated by the teachers into outdoor learning practices. The principles of outdoor education became an inherent part of EE at the school level (bottom-up), but not necessarily at the top-down level.

3.4.4 Discrepancies in the Source of the Policy: A "Bottom-Up" and "Top-Down" Policy

A "bottom-up" policy regarding outdoor education is created and applied through the initiative of those who are often most influenced by change but are not in a place of official capacity of power and authority (Hodgson et al., 2008), as opposed to "top-down", in which the main policy from authority figures determines to what level outdoor learning can be and needs to be included in the school (Ho et al., 2015).

3.4.4.1 Top-Down

Policy makers in different countries determine the outdoor education policy in different ways. In Australia for example, the outdoor education policy is anchored in two policy documents: The Melbourne Declaration and the national curriculum (Passy et al., 2019; Waite et al., 2016). In 2017, the Assessment and Reporting Authority (ACARA) of the curriculum in Australia linked the outdoor learning program with the curriculum (Gray, 2018). There are many ramifications in the national educational amendment in Australia regarding the implementation of outdoor learning and the frequency that it actually occurs. The connection between outdoor learning and the curriculum offers the students an experiential framework in a natural environment that can be linked to four dimensions: health and physical education,

humanities and social sciences, geography and science. In reality, the scope of the program and its continuity depend on the needs and interests of the individual school. Hence, a gap emerges that is attributed to teacher training and the level of support vis-à-vis funding, local culture and national appeal to adopt outdoor learning (Waite et al., 2016).

Another example comes from Singapore. Since Singapore's independence, its policy has leaned towards pragmatic national considerations, in which patriotism and love of country are seminal. Outdoor activities, such as the national cadets, were established in middle and high schools with the objective of alleviating fear and resentment towards the military. The Ministry of Education was given the responsibility to improve students' physical condition and develop a positive attitude towards challenging outdoor experiences in order to form a strong and dynamic society. Furthermore, the need to adapt the curriculum to life's complexities and allow the students to acquire life skills and develop knowledge and approaches for the concern for the environment through outdoor education became official. In 2014, government offices recognized outdoor education as a suitable field in which to develop students' skills in the twenty-first century and instill values such as self-confidence, resilience and leadership skills among youth, and national prototypes were developed for outdoor education connected to Singapore's natural heritage. The lack of experienced educators in outdoor teaching and proper training appeared to be the principal obstacles in implementing the policy during the time while the prototypes circulated throughout the country. In other words, there is an understanding in Singapore that outdoor education warrants expertise and experience, which need to be developed over time (Waite et al., 2016).

3.4.4.2 Bottom-Up

In Denmark, there is a long-standing culture of being outdoors in an open environment that is recognized as recreation and outdoor education; activity in nature is considered an integral part of life (Passy et al., 2019). Outdoor education is left in the hands of the teachers, as they have the autonomy to instate the curriculum and the freedom to develop ideas and new pedagogic methods. In the 1990s, the national movement, "udeskole", was founded by a private initiative of teachers. This movement shares knowledge, implements outdoor education, and connects knowledge within a social, economic, political and geographical context. The program was supported by municipalities such as Copenhagen and non-government organizations such as the Outdoor Council, but without formalization or government support. Only in 2010 did a change ensue when projects funded by the EU improved outdoor education among teachers. The accrued knowledge served as a basis for the projects and even larger grants. The first project was "Teach Out", which examined the effects of outdoor education and found a rise in physical activity, motivation, well-being and improvement in social relations. Later, a project of €1.8 million was funded by the Denmark government for developing and conveying practical knowledge. Udeskole changed within a short time from a movement that emerged from

the teachers' initiative to a policy that emerged from the top, but the enactment and the state budget framework did not necessarily improve outdoor education, and the decision regarding its existence still lay in the hands of the teachers (Waite et al., 2016).

In England, outdoor education has a long history beginning from the bottom as well and developing top-down. There are both public and private organizations that offer this learning service. In 2006, the government published a policy document that supported outdoor learning; it was granted a budget and a supervising body. However, the policy presented mixed messages: The fear of health and safety standards and the national curriculum encouraged the teachers to remain in the classroom. As a result, only teachers committed to outdoor teaching actually taught outside of the classroom (Waite et al., 2016). A significant turning point occurred when the government published a document entitled "The Natural Choice" (HM Government, 2011), which called for the strengthening of the connection to the natural environment through the understanding that today this connection is getting lost. The objective of the program was to support teachers to teach outdoors. The project indicated that there was a hidden demand for outdoor learning in school (Gilchrist et al., 2017), and the many advantages of outdoor learning were supported in international and local research. Instead of attempting to modify approaches and positions through training, the government aspired to change the culture by funding teacher support in schools (Waite et al., 2016).

An example of bottom-up influence on policy is the outdoor learning program that supports the development of forest schools in England (Dean, 2019) or "Bush Kindergarten" in Australia (Campbell & Speldewinde, 2019; Elliott & Chancellor, 2014). In these cases, after implementing the outdoor education program, policy makers acknowledged the importance of it and changed local policies according to diverse aspects, such as risk management, teacher training, and policy recommendations. In Australia, for example, they developed eight different policies to support "Bush Kindergarten" (Campbell & Speldewinde, 2019). The example of forest schools in England may also be seen as a response to the national curriculum, by offering an alternative to the outcome centered approach (Dean, 2019).

3.5 Summary and Conclusions

In this article, we reviewed outdoor education policies worldwide, and provided examples of the gaps between the written policy and its implementation in the field. This review indicates that a clear, written policy on the national level can promote outdoor education in the field. However, to succeed at the implementation level, the written policy may require specific adaptations in the geographical, sociocultural and political contexts. Many countries are culturally diverse societies with a variety of geographical landscapes, ancient histories and diverse climate areas that can be pleasant and accommodating for outdoor education most of the year to different

extents. Creating an official policy for outdoor learning must be adapted to the unique characteristics of each country.

In addition, outdoor education policy cannot conflict with existing educational policies in other fields. To generate a comprehensive change, the top-down/bottom-up approaches must be combined, as they complement one another. Furthermore, to implement the approach and principles of outdoor education, it is imperative to supply resources and time to train new teachers for outdoor education, as well as support experienced teachers so they can incorporate pedagogies of outdoor education effectively. Based on the unclear policy in outdoor education that characterizes many countries, this review can encourage policy makers to promote outdoor learning and support educators who are already implementing outdoor education and are interested in making progress in policy clarification in this field.

Regarding the connection between outdoor education and environmental education or EfS at the policy level, both nationally and internationally, policy documents that focus on promoting efforts to achieve a more sustainable society through education (for example, the SDGs), must include explicitly the role, importance and value of outdoor education.

In the current times of crises and uncertainty, felt by every citizen around the globe (for example, throughout the COVID-19 pandemic and climate change), the need to promote outdoor education is increasing tremendously. This type of learning encourages social interaction, reinforces emotional resilience both on a personal level and within the community and fosters creativity and flexibility, which is today more crucial than ever. Therefore, it is incumbent upon us to act to promote outdoor education and the sooner the better.

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Chapter 4
Connectedness to Nature Through Outdoor Environmental Education: Insights from Psychology

Michael L. Lengieza, Rosemary Aviste, and Janet K. Swim

4.1 Connectedness to Nature Through Outdoor Environmental Education: Insights from Psychology

One of the emerging goals of many outdoor environmental education (OEE) programs is to connect individuals to the natural world (see Barrable & Booth, 2020; Pirchio et al., 2021). This goal is both laudable and shared by many who are concerned with the relationship between humans and nature. Across a range of disciplines from the humanities, social sciences, and natural sciences, working to increase an individual's sense of connectedness to nature is a critical step toward a more environmentally responsible society (c.f., Crimston et al., 2016; Leopold, 1949; Naess, 1987; Schultz, 2002; Stern et al., 1999). For example, Naess (1987) suggests that including nature in our self—and vice versa—is critical to altering our treatment of the environment for the better. Echoing these claims, modern-day environmental psychologists (e.g., Schultz, 2002) have contended that connectedness to nature—the extent to which nature is included in an individual's sense of self—is a critical precursor of nature-centered concern for the environment and commitment to protecting it.

Supporting these contentions, individuals who feel more connected to nature are more pro-environmentally disposed (see Whitburn et al., 2020 for a meta-analysis). Interestingly, these individuals also tend to have better psychological well-being (e.g., Mayer et al., 2009) and are more pro-social (e.g., Pirchio et al., 2021). Thus, because it may simultaneously promote the health of both the planet and people, connectedness to nature is of particular interest in outdoor environmental education

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_4

and in other contexts where the goal is to fundamentally change the way people relate to the natural world.

This chapter will review the psychological literature concerning the predictors of connectedness to nature and then connect the insights from psychology to the specific context of OEE. We begin by defining connectedness to nature from the perspective of environmental psychology and then describe the most relevant literature on the predictors of connectedness to nature. Last, we consider the broader implications of the reviewed findings for OEE.

4.2 Insights from Psychology

4.2.1 Definitions of Connectedness to Nature

Clarity regarding any goal is instrumentally important for adequately assessing progress toward that goal. Thus, it is particularly important to carefully define exactly what we mean by connectedness to nature if our goal is to promote it. Two points of emphasis are found in the definitions of connectedness to nature (connectedness hereafter) used by environmental psychologists. Definitions of connectedness often emphasize (1) a merging of self and nature (e.g., Schultz, 2002) and (2) a feeling of oneness or unity with nature (Mayer & Frantz, 2004). Importantly, both points of emphasis emerge in qualitative analyses of how individuals explain what connectedness means to them (Unsworth et al., 2016). Given these considerations, we define connectedness as the psychological joining of nature and the self, which manifests as a sense of oneness with nature (see Lengieza & Swim, 2021).[1]

4.2.2 Overview

The review of the literature found within environmental psychology is separated into three thematic categories: (1) situational contexts (i.e., experiences with nature & activities); (2) internal psychological states (i.e., mindfulness, states that involve our sense of self, affect and motivation); and (3) individual differences (i.e., demographics, personality, and worldviews) that influence connectedness. Connections to OEE are integrated throughout the review; however, each section ends with a summary of the findings outlined in that section and how they can inform OEE.

Each of the three sections has the potential to inform OEE in slightly different ways. First, the "*Situational Contexts*" section focuses on how both (a) a variety of

[1] This definition treats connectedness as distinct from what is most aptly referred to as environmental*ist* identity which instead focuses on whether one views themselves as a person who engages in various forms of pro-environmental behavior, or outright views themselves as an environmentalist (e.g., Kashima et al., 2014).

experiences with nature and (b) a variety of activities might facilitate or hinder connectedness. Thus, insights from this section should be especially relevant for informing OEE planning, including the practices and elements that should be incorporated into OEE experiences and the settings in which they should ideally occur. Next, the "*Psychological States*" section focuses on how connectedness is impacted by psychological states related to mindfulness, the self, and affect. In this section, we emphasize the importance of focusing on underlying processes—relevant for both OEE planning and evaluation—and how such a focus can guide decisions about activities that can enhance and detract from the connectedness-promoting qualities of OEE. Finally, the "*Individual Differences*" section highlights the influence that demographic characteristics, personality, and worldviews may have on connectedness. Insights found within this section will both point to potential moderators of the effect that OEE programs have on connectedness and may help guide decisions about how to best tailor programs to the demographic groups they serve. This section, especially the literature on worldviews, might also inform decisions about what other outcomes serve as dual-purpose stepping-stones that indirectly support connectedness.

4.2.3 Situational Contexts that Influence Connectedness

Situational context influences many psychological phenomena, including connectedness. The situational contexts most important to consider for connectedness are (a) experiences with nature—including virtual nature—and (b) the emergent context created by engaging in different outdoor activities. It is worth noting that this section could easily include outdoor environmental education itself; however, we save such findings for later in the chapter.

Knowing the situational contexts that support connectedness and those that hinder it can guide decisions about which contextual features might most support OEE's goal of promoting connectedness to nature. In other words, the research reviewed in this section—especially in conjunction with the research reviewed in the section on psychological states—can help identify (a) in which settings OEE will best promote connectedness and (b) which activities make the most sense to include in OEE.

4.2.3.1 Experiences with Nature

Unsurprisingly, experiences with nature are a robust predictor of connectedness; to have a relationship with nature, one needs to interact with it (Lengieza & Swim, 2021). These interactions with nature, however, can take many forms. In some cases, the experiences with nature that impact connectedness can involve actual, first-hand contact, such as walking in nature (e.g., Mayer et al., 2009). In other cases, the interaction with nature can be mediated by technology and still have an

impact on connectedness—such as viewing pictures (e.g., Richardson & Sheffield, 2015), watching videos of nature (e.g., Soliman et al., 2017), or even immersive experiences provided by virtual reality (e.g., Ahn et al., 2016). Consequently, we review both types of experiences with nature (i.e., first-hand and mediated) below.

First-Hand Contact with Nature

Many studies have demonstrated that first-hand experiences with nature, in a variety of forms, improve connectedness (e.g., Beery, 2013; Braun & Dierkes, 2017; Kals et al., 1999; Lumber et al., 2017; Mayer & Frantz, 2004, S1; Nisbet et al., 2009; Schultz & Tabanico, 2007, S3–5; Tam, 2013). The connectedness-promoting-effect of spending time in nature seems to hold for mundane or ordinary experiences with nature, such as walking in nature (Mayer et al., 2009; Nisbet & Zelenski, 2011; Nisbet et al., 2019), as well as for exceptional experiences with nature, such as nature-based tourism (Burbach et al., 2012; Wheaton et al., 2016) and wilderness expeditions (Barton et al., 2016; Richardson et al., 2016). Further, the interactions one has with nature need not be confined to only organic, wild, or "pristine" nature to promote connectedness but can also involve human-made nature, such as zoos (e.g., Bruni et al., 2008; Schultz & Tabanico, 2007) and urban gardens (Uhlmann et al., 2018). Connectedness can even be promoted by incredibly subtle exposure to nature, such as the presence of plants in a lab space (Weinstein et al., 2009, S4) or, intriguingly, simply removing one's shoes while outside. One study found that being comfortable walking barefoot outdoors was associated with increased connectedness (Harvey et al., 2016). An experimental study later corroborated this effect, implying that tactile contact with nature may cause increases in connectedness to nature (Rickard & White, 2021). Ultimately, many studies conclude that the effect of acute (i.e., one-time) first-hand experiences with nature on connectedness is positive.

The frequency of experiences with nature also matters; a single isolated experience with nature is likely not enough to achieve the highest possible level of connectedness. Studies have shown that more frequent self-reported experiences with nature are associated with higher levels of connectedness (e.g., Hinds & Sparks, 2009; Kals et al., 1999; Larson et al., 2018; Mayer & Frantz, 2004, S1; Nisbet et al., 2009; Pensini et al., 2016; Richardson et al., 2016; Rosa et al., 2018; Schultz & Tabanico, 2007, S5; Scott, 2010, S1–2; Swami et al., 2016; Tam, 2013, S2). Similarly, living closer to nature (e.g., Cheng & Monroe, 2012) or in a rural environment (e.g., Harvey et al., 2016; Hinds & Sparks, 2009), which should afford more opportunities for interacting with nature, are also associated with higher levels of connectedness. Thus, experiences with nature, especially with greater frequency, are an important determinant of connectedness to nature.

Characteristics of Nature

Contact with nature in broad terms seems to robustly promote connectedness. However, there is some evidence that contact with certain *types* of nature may have differential impacts on connectedness. In other words, the characteristics of the natural context—the presence of specific attributes (e.g., greenery, water, etc.) as well as situational elements of the nature experience (e.g., weather, immersion, etc.)—also influence the effect on connectedness (e.g., Wyles et al., 2019).

Intuitively, compared to lower quality natural areas, higher quality natural areas (i.e., protected areas) may be more likely to promote connectedness (Wyles et al., 2019). Additionally, connectedness seems to be better supported by *rural* green spaces compared to *coastal* blue spaces (e.g., oceans; Wyles et al., 2019). However, some evidence suggests that *coastal* green spaces and *coastal* blue spaces may actually have similar effects on connectedness (Rickard & White, 2021) and the authors know of no research comparing rural blue spaces (e.g., lakes and rivers) to rural green spaces (e.g., forests and mountains). In other words, there is plenty of room for debate about blue spaces versus green spaces. Additionally, global factors like weather and season may influence connectedness. Participants report lower levels of connectedness during the winter compared to autumn and spring and on rainy days compared to non-rainy days (Duffy & Verges, 2010).

The relative intensity of the nature experience may also influence connectedness. For example, longer experiences with nature are associated with higher levels of connectedness (Wyles et al., 2019). Further, exposure to plants (referenced above, Weinstein et al., 2009, S4) resulted in different levels of connectedness depending on how immersed the participant was. Participants who reported being more immersed when exposed to plants felt greater connectedness than those who reported less immersion, whereas the opposite was true when participants were not exposed to plants (Weinstein et al., 2009, S4). This effect was also found in two precursor studies using pictures of nature (Weinstein et al., 2009, S2 & S3). Thus, being more absorbed, so to speak, while in natural environments may facilitate connectedness. This observation is important to the extent that some settings are more immersive than others.

Childhood Contact with Nature

The above findings emerged almost entirely from research on adult experiences in nature. However, a handful of research studies focus on the importance of childhood experiences with nature. Like adult experiences, childhood experiences with nature also positively predict connectedness (Beery, 2013; Cheng & Monroe, 2012; Hinds & Sparks, 2009; Pensini et al., 2016; Rosa et al., 2018; Tam, 2013; Cleary et al., 2020). However, the long-term impact of childhood experiences with nature on connectedness may primarily operate through their influence on contact with nature later in life (Pensini et al., 2016; Rosa et al., 2018). In other words, childhood experiences may promote connectedness in the long term specifically because they make individuals more likely to continue engaging with nature. Further, it has been suggested that children have an innate connectedness to the natural world. Contact with

nature can help build this connection and shape their sense of self in relation to nature, which can carry through to adulthood (Phenice & Griffore, 2003). Although it should be noted that prior childhood contact with nature may not be *necessary* for adults to gain an increased sense of connectedness when in nature (Cleary et al., 2020), it may be "never too late" to start spending time in nature.

These findings suggest that encouraging children to have experiences with nature (e.g., through OEE) earlier in life can create a life-long cycle of interacting with nature, as is emphasized in some writings on promoting connectedness through OEE (see Braun & Dierkes, 2017). However, this process does not strictly have to begin in childhood. It is also worth noting that, despite psychological research investigating the importance of experiences with nature for fostering connectedness using both child and adult samples, there is still much to learn about experiences with nature across the lifespan. For now, we must assume that findings from adults generalize to children and vice-versa until more research better investigates the differential process that might be at play at different life stages.

Applications to OEE: First-Hand Experiences with Nature

A critical part of OEE is spending time in nature, which bodes well for programs seeking to connect learners with nature. However, the nuances of experiences with nature raised in this subsection are important for OEE because they highlight the value of carefully considering the physical context in which OEE experiences occur. For example, environments that *feel* more immersive (e.g., removed from the hustle and bustle of everyday life) may be more suited to promote connectedness, and natural areas that *feel* higher quality may be a better context for OEE. It is important to note that we emphasize *feel* because that will be the psychologically more impactful factor (moreso than what might be objectively true).

This research also implies that it is important to consider the ramifications of OEE that extend beyond any one acute OEE experience. The frequency of nature experiences matters, and research on childhood experiences with nature suggests that fostering lifelong, repeated experiences with nature is ideal. Consequently, OEE is not a bandage we can apply once and expect to take hold without deliberately encouraging future engagement with nature. Program planning efforts might benefit from considering ways OEE can promote future engagement with nature outside of the OEE "classroom." Further, OEE evaluation efforts should assess immediate short-term effects on connectedness as well as medium- and long-term effects that OEE has on future engagement with nature.

Mediated Experiences with Nature

In addition to first-hand experiences with nature, individuals can have experiences with nature that are mediated by technology. Such experiences can provide insights into the types of programming that complement the central features of OEE. As it turns out, such mediated experiences with nature may also increase connectedness.

For example, viewing pictures (e.g., Richardson & Sheffield, 2015; Scott, 2010, S3) or videos of nature (Mayer et al., 2009, S2–3; Soliman et al., 2017; Zelenski et al., 2015, S3) can result in increased connectedness. However, these findings may depend on the level of immersion in the virtual forms of nature, similar to first-hand exposure to nature (e.g., Weinstein et al., 2009, S2–3; but also see Soliman et al., 2017[2]).

To the extent that immersion is an important situational consideration, it is unsurprising that immersive technology like virtual reality (VR) has also been considered as a way to increase connectedness. Research on VR and connectedness is in its infancy, and, therefore, our understanding of how VR impacts connectedness is incomplete. Thus far, some studies have demonstrated that VR can better promote connectedness than ordinary video (i.e., Ahn et al., 2016, S1–2; Yeo et al., 2020) and non-nature VR (Sneed et al., 2021). In contrast, others suggest that VR has no benefit over videos (i.e., Ahn et al., 2016, S3; Soliman et al., 2017). Finally, a pre-post study with children found that connectedness did not change after a virtual hike (Bruni et al., 2017, S3), but this may be attributable to the one-off virtual-hike being too distracting for children due to its novelty. Consequently, at present, VR simply represents an exciting but promising possibility for promoting connectedness, but more research is undoubtedly needed.

Applications to OEE: Mediated Contact

This section on mediated contact with nature suggests three things. First, it suggests that technology-aided components of OEE experiences may be a valuable complement to *in-situ* activities. For example, a valuable addition to OEE programming could be incorporating lessons where participants in OEE learn about the similarities between their local context and some distant foreign context using the assistance of technology. Second, it also suggests that we might be able to use technology to highlight aspects of nature that can be experienced no other way—for example, using time-lapse videos to show natural processes on a timescale otherwise incomprehensible to humans. Third, it suggests that OEE may be able to become more accessible to urban residents. Urban OEE programs might capitalize on the advent of educational technology (e.g., educational documentaries) to incorporate virtual field trips to experience natural areas that would otherwise be inaccessible.

However, we provide a cautionary note. Although several studies have identified viewing nature in the form of videos and pictures as potential ways of promoting connectedness, it is important to acknowledge that some studies report no effect of viewing pictures (Dopko et al., 2014, S1–2) or videos of nature (Zelenski et al., 2015, S1). Additionally, the effect of videos and some forms of VR—and, by logical extension, likely the effect of pictures as well—may fall short of actually spending

[2] The discrepancy between these two findings is likely because in one study immersion was manipulated via a mental imagery script (Weinstein et al., 2009) whereas in the other immersion was manipulated in the form of the technology used (e.g., video vs. VR; Soliman et al., 2017).

time in nature (e.g., Mayer et al., 2009, S2–3; see Sneed et al., 2021). Thus, mediated experiences with nature should both be used with caution—as they may not *always* be effective—and to complement, rather than replace, first-hand experiences with nature.

4.2.3.2 Activities

The above section highlighted that the 'where' of OEE is an especially important consideration when seeking to promote connectedness to nature. We also alluded to the importance of the '*what'* of the situation (c.f., the importance of duration, immersion, and even footwear). In this section, we further elaborate on how the activities in which one engages (i.e., the 'what') influence connectedness. Indeed, many activities promote connectedness, for example, activities including direct contact with nature, such as outdoor recreation (e.g., Beery, 2013). Others—including meditation (e.g., Aspy & Proeve, 2017) and the use of psychedelics (e.g., Nour et al., 2017)—can occur without any contact with nature.

Activities as Part of Nature Experiences

A number of activities in which experiences with nature are an inherent element are positively associated with connectedness. Specifically, gardening (e.g., Beery, 2013; Sanguinetti, 2014; Uhlmann et al., 2018), planting trees (e.g., Whitburn et al., 2019), walking dogs (Beery, 2013; Wyles et al., 2019), having picnics in nature (Beery, 2013), studying plants and animals (Beery, 2013), depicting nature artistically (Bruni et al., 2017), as well as receiving interpretation while touring nature parks (Burbach et al., 2012) have all been positively associated with connectedness. Further, one study suggests that deliberately noticing nature can increase connectedness above and beyond any increases caused by the mere fact that it involves an experience with nature. In this study, participants in a business-as-usual condition and participants in a notice-nature condition spent an equal amount of time in nature, yet only the participants who were instructed to notice nature experienced increased connectedness (Passmore & Holder, 2017). This study highlights that, even when participants are already in nature, deliberate engagement in specific activities can further promote connectedness.

Applications to OEE: Activities in Nature

Overall, the research on activities that promote connectedness suggests that including activities that involve caring for nature (e.g., gardening, planting trees) and active engagement with nature (e.g., studying nature, engaging with nature artistically, and noticing nature) in OEE programming might be especially important facilitators of connectedness. Likely, such activities are already incorporated into

OEE programming; thus, these findings should simply reinforce their value. However, once again, there are some nuances to the application of these findings.

Some activities involve direct contact with nature but do not promote connectedness. For example, beach-going and playing on playgrounds failed to correlate with connectedness (Bruni & Schultz, 2010, S3). Perhaps more interestingly, other activities involving direct contact with nature might hinder connectedness, such as waterskiing and wakeboarding (Beery, 2013) and exercising or playing in nature (Wyles et al., 2019). In the case of these activities—all of which seem to have a recognizable emphasis on the hedonic use of nature—it is possible that nature ends up being treated as no more than a convenient setting for the given activity. If this is the case, it could reduce nature to a non-salient background element of the experience or, worse, might cause nature to be viewed solely as a means to an end, potentially explaining the null/negative effects. More generally, the fact that these activities decrease connectedness despite being experiences with nature suggests that we must be deliberate in the activities we include in OEE experiences; some activities might actually work against the goal of promoting connectedness to nature.

It is important to note, however, that the adverse effects of working and playing in nature on connectedness may be culturally dependent. For example, research has shown that rural children engaging in outdoor tasks such as herding, collecting firewood, farming, and hunting might combine these activities with play and reported pride in their environmental competence (Gold & Gujar, 2007) and greater connectedness (Nabhan & Trimble, 1994; additionally see Chawla, 2020). The activities reported in these studies involve direct contact with nature and center nature as an integral part of the activity. Therefore, the importance of nature to the activity—whether it is merely a convenient setting for the activity versus nature being part of the central focus of the activity—might determine the effect of the activity on connectedness. Educators should then be deliberate in designing programs and activities that do not just take place outdoors but which make nature an integral part of the learning experience.

Activities Without Nature

Other activities can promote connectedness but do not necessarily involve actual experiences with nature. While they do not involve direct experiences with nature, these activities can influence how we think about nature and, therefore, the potential to connect to nature. Such activities include meditation, other reflective practices, and the use of psychedelics. All these activities can be done as part of an experience with nature; however, they do not *need* to involve nature directly.

Meditation

Meditation is a recently re-popularized phenomenon that has been studied in a variety of areas, including the context of connectedness to nature. From a Western understanding, meditation is a set of practices designed to cultivate particular

mental qualities through repeated induction of a mental state (Lutz et al., 2007). Thus, at its core, meditation is a practice directly intended to alter how we think (c.f., Lutz et al., 2007). As a word of note, while one commonly known form of meditation is mindfulness meditation, other meditative practices do not focus on mindfulness.

Research suggests that meditation (Beery, 2013; Nisbet et al., 2019; Unsworth et al., 2016) and yoga (Beery, 2013) might effectively enhance the already positive effect of spending time in nature on connectedness. For example, individuals who spent time meditating in nature felt greater connectedness than individuals who just spent time in nature without meditating (Nisbet et al., 2019; Unsworth et al., 2016). However, the effect of meditation may not require contact with nature. For example, compared to self-administered progressive muscle relaxation, self-administered mindfulness meditation and loving-kindness meditation have been associated with connectedness without contact with nature (Aspy & Proeve, 2017). This suggests that meditative practices might have effects that are entirely disconnected from those of contact with nature. This evidence is interesting because it suggests that, first and foremost, OEE experiences may benefit from directly incorporating meditative practices into daily programming. However, it also suggests that the effectiveness of OEE, at least concerning connectedness, may be enhanced by including meditation-based 'homework' assignments that do not necessarily need to involve nature.

Reflection

In the abstract, the changes in our way of thinking that are encouraged by meditation seem especially related to encouraging more reflective modes of thinking. Beyond meditation, however, there are other ways to encourage reflective thinking and alter the way we think. Importantly, some of these other reflective ways of thinking may also positively impact connectedness. For example, differences in how we reflect upon past experiences (e.g., eudaimonic vs. hedonic reflection vs. mundane recollection) may influence connectedness (Lengieza et al., 2021). Specifically, engaging in reflection focusing on meaning and purpose derived from some experience (i.e., eudaimonic reflection) resulted in affective states that promoted down-stream increases in connectedness, whereas reflecting on the fun and pleasure derived from an experience (i.e., hedonic reflection) did not (Lengieza et al., 2021).

Additionally, supporting the importance of altering our ways of thinking to promote connectedness, there are educational pedagogies that may promote connectedness. For example, consider Langerian mindful learning,[3] learning that is designed to foster flexible and open mindsets (Tang et al., 2017) as well as shift thinking patterns away from more pervasive modes of thinking found within the educational context (Wang et al., 2016). Compared to other forms of learning, mindful learning

[3] Not to be confused with the Buddhist perspective on mindfulness (see Langer, 2000).

has been associated with higher levels of connectedness (Wang et al., 2016; Wang et al., 2019). Finally, we can alter our thinking about nature by consciously choosing to think about nature in a different light. For example, anthropomorphizing nature might be an effective means of increasing connectedness (Liu et al., 2019; Tam et al., 2013). Thus, there is increasing evidence that altering the way we think (e.g., meditation, mindful learning) and what we think about (e.g., the content of reflections, anthropomorphizing nature) can increase connectedness. As mentioned above, this suggests that both direct incorporations of reflective lessons in OEE programming as well as reflective 'homework' activities can potentially enhance the effects of OEE on connectedness.

Applications to OEE: Activities Without Nature

This section highlights that incorporating deliberate attempts to fundamentally change the way people think into OEE programming is critical in promoting connectedness. In both the case of mindfulness and reflection, there is an exciting possibility that the impact of OEE experiences does not have to end when learners leave the outdoor classroom. Indeed, OEE programs might see an enhanced impact on connectedness to nature simply by including at-home mindfulness- or reflection-based programming. Still, it should be noted that even subtle differences in the framing of reflections can have important implications for their psychological outcomes. For example, one study found that the subtle difference between writing about "how humans are similar to animals" and "how animals are similar to humans" resulted in different levels of moral concern for both animals and marginalized groups. The former resulted in less moral inclusion, the latter in greater moral inclusion (Bastian et al., 2012). Thus, it would be most prudent to empirically evaluate the effects of any reflective programming before making widespread changes.

4.2.4 Psychological States that Influence Connectedness

In addition to situational factors, many psychological states influence connectedness. It is especially valuable to consider the specific psychological states that may serve as pathways, or barriers, to connectedness. Such research contributes to our understanding of the processes through which other antecedents of connectedness may have their effect. If we understand the nuances of the process underlying a given predictor of connectedness, such as spending time in nature or meditation, we can better design programs that enhance that specific process to increase the impact of any given OEE program. In other words, the research in this section will inform what psychological factors can be leveraged in efforts to increase connectedness. The states reviewed in this section can be categorized as related to mindfulness, the self, and affect.

4.2.4.1 Mindfulness

Earlier in this chapter, we discussed meditation as an activity. However, as mentioned above, not all meditative practices focus on mindfulness (e.g., loving-kindness meditation). Consequently, we have included this separate section on mindfulness to avoid conflating meditation and mindfulness. Additionally, meditation, even when it *is* aimed at increasing mindfulness, might result in changes in phenomena other than mindfulness, and those changes might turn out to be the primary route of influence that meditation has on connectedness. In other words, evidence that meditation influences connectedness does not necessarily indicate that mindfulness, as a psychological quality of the mind, is the mechanism that influences connectedness (see Lengieza & Swim, 2021 for elaboration). For example, hypothetically, meditation might simply increase individuals' ability to introspect, and such an increase in introspection might be the pathway to some hypothetical increase in connectedness (c.f., Richardson & Sheffield, 2015). Thus, it is important that research documents explicitly the association between mindfulness and connectedness. Conversely, just because evidence suggests that mindfulness is associated with connectedness does not inherently imply that meditation will automatically increase connectedness, which we will elaborate on below.

Fortunately, a recent meta-analysis suggests a robust positive association between mindfulness and connectedness (see Schutte & Malouff, 2018). Consequently, it seems unnecessarily redundant to outline the findings related to mindfulness and connectedness individually. However, we feel that there is one important trend worth highlighting.

Mindfulness is a multifaceted and nuanced construct that can be broken down into five facets: "observing", "describing", "non-reactivity", "non-judging", and "acting with awareness". Mindfulness as a general construct has been associated with higher levels of connectedness (Schutte & Malouff, 2018; e.g., Howell et al., 2011; Richardson & Sheffield, 2015, S1–2; Unsworth et al., 2016, S1). However, certain facets seem to be more related to connectedness than others. Specifically, the "observing" (Barbaro & Pickett, 2016, S1–2; Hanley et al., 2017), "describing" (Barbaro & Pickett, 2016, S1–2), and "nonreactivity" (Barbaro & Pickett, 2016, S1–2; Hanley et al., 2017) facets of mindfulness have been associated with connectedness whereas the "nonjudging" (Barbaro & Pickett, 2016, S1–2; Hanley et al., 2017) and "acting" (Barbaro & Pickett, 2016, S1; Hanley et al., 2017) facets have not. In other words, not all facets of mindfulness influence connectedness (e.g., Barbaro & Pickett, 2016).

This point of nuance is especially relevant because it suggests that not all meditative practices might be an effective means of influencing connectedness. There are numerous interventions that one could feasibly consider to increase mindfulness, but they might not influence each of the facets of mindfulness equally. Therefore, one might accidentally select a mindfulness intervention that fails to target one of the facets associated with connectedness (i.e., "observing", "describing", "nonreacting"). For example, sitting meditation might primarily target the "non-judging" facet of mindfulness (Sauer-Zavala et al., 2013), which does not impact

connectedness (e.g., Barbaro & Pickett, 2016). Body scan meditation and yoga, on the other hand, seem to primarily target the "describing" facet of mindfulness (Sauer-Zavala et al., 2013), which *has* been correlated with connectedness (e.g., Barbaro & Pickett, 2016). Thus, this would suggest that incorporating sitting meditation into OEE might not be optimal, whereas yoga and body scan meditation might be particularly effective; the former fails to target the proper mechanisms, whereas the latter two succeed. Such insight would be lost without this nuanced view of mindfulness and careful consideration of the underlying process behind a given intervention. This is a relevant consideration for all programming, not just meditation and mindfulness; however, this happened to provide an exceptional illustration of its importance.

Applications to OEE: Mindfulness

Substantial research has demonstrated a link between mindfulness and connectedness, and we can be reasonably confident that mindfulness increases connectedness (Schutte & Malouff, 2018). Thus, incorporating programming that directly emphasizes mindfulness, such as mindfulness meditation and yoga, into OEE programming might enhance the effect of OEE on connectedness. However, as noted above, there is evidence to warrant being especially deliberate about which facet of mindfulness is emphasized in any OEE programming. Specifically, programming should likely focus on incorporating mindfulness-supportive activities that will affect connectedness *through* changes in the "observing", "describing", "nonreacting" facets of mindfulness. More generally, this example hopefully demonstrates the importance of considering the *process* through which situational and contextual features influence connectedness.

4.2.4.2 Psychological States Related to the Self

Mindfulness is seemingly one of the most popularly studied psychological states that influence connectedness. However, there are other important states to consider. Ultimately, definitions of connectedness describe it as including nature in the self. We can, therefore, expect that psychological states associated with the self would influence connectedness (Lengieza & Swim, 2021). The most notable psychological state related to the self that influences connectedness is self-awareness.

Negative Impacts of the Self on Connectedness

Studies suggest that there might be a negative effect on connectedness brought about by taking oneself as the object of awareness or, phrased differently, thinking about oneself from the perspective of an observer. Across three samples of women, self-objectification—viewing the self from the perspective of a *critical*

observer—was negatively associated with connectedness (Scott, 2010). Another study demonstrated that experimentally inducing increased objective self-awareness (i.e., seating participants in front of a mirror) diminished connectedness (Frantz et al., 2005).[4] Moreover, other evidence suggests that being publicly self-aware—that is, being more concerned with how you appear to others—is negatively associated with connectedness (Mayer et al., 2009) and that decreases in public self-awareness underly the process through which spending time in nature increases connectedness (Lengieza & Swim, 2021). Finally, rumination—defined as anxious, or preoccupied, attention focused on the self, emphasizing self-worth or failure—is negatively correlated with connectedness (Richardson & Sheffield, 2015). Thus, excessively focusing on oneself from a third-person or critical perspective seems to have a negative impact on connectedness.

This may be an important insight for OEE programming because it suggests that we want to be mindful of avoiding activities that evoke pre-occupied or anxious self-attention in participants. This suggests that, while there is likely value in encouraging learners to get out of their comfort zone, we should avoid making OEE participants embarrassed or self-conscious, in the colloquial sense, through our programming.

Other evidence also implies that a reduced emphasis on the self may be important for facilitating connectedness. First, mindfulness may promote connectedness because of its effect on decentering (Hanley et al., 2017; see also Nisbet et al., 2019), which has been linked to a blurring of the self-other dichotomy (Hanley et al., 2018). Thus, the association between decentering and connectedness further implicates a lessened focus on the self—at least the independent and distinct self (c.f., Markus & Kitayama, 1991)—as an important predictor of connectedness. Second, the extent to which individuals experienced ego-dissolution—the pharmacologically induced state of selflessness associated with psychedelics—during their self-reported most significant experience with psilocybin is associated with higher reports of connectedness (Nour et al., 2017). Thus, this evidence would further support the notion that some diminishment of attention to the self might promote connectedness.

Positive Influences of the Self on Connectedness

While the above evidence suggests that focusing on the self gets in the way of connectedness to nature, reality may not be so clear-cut. Indeed, other evidence suggests that 'the self' might not always be an obstacle on the path to connectedness. Private self-awareness—being aware of one's inner experience, effectively synonymous with introspection—may enhance connectedness (Mayer et al., 2009), unlike

[4] This effect was primarily true for individuals who held less positive environmental attitudes; individuals with highly positive environmental attitudes experienced similar levels of connectedness in either condition (Frantz et al., 2005) which may be reflective of a ceiling effect for connectedness among individuals who already hold strong pro-environmental attitudes.

objective self-awareness and public self-awareness. Consistent with this finding, reflective self-attention appeared to be a better predictor of connectedness than mindful attention (Richardson & Sheffield, 2015, S1–2). Moreover, how we construe the self (e.g., interdependent, independent, etc.) seems to influence connectedness. Focusing on the self from an interdependent perspective is associated with greater connectedness (Davis & Stroink, 2016b). In other words, there are cases where positively focusing on the self can promote connectedness to nature. Most importantly, higher levels of reflective self-attention might strengthen the effects of contact with nature on connectedness (Richardson & Sheffield, 2015, S3), suggesting that orienting individuals toward an introspective type of self-attention can be used to enhance OEE.

Thus, while we should be cautious about creating heightened public, ruminative, or unduly critical self-awareness through the programming incorporated in OEE, directly involving participants' sense of self may be an important ingredient for increasing connectedness. Specifically, it may be valuable to incorporate programming that involves a great deal of introspection (see also the earlier sections on reflection and meditation), and it may be valuable to directly promote interdependent self-construals, as two examples.

Applications to OEE: The Self

Self-related phenomena are an important source of influence on connectedness. Specifically, how we attend to the self (e.g., Richardson & Sheffield, 2015) and how we subjectively experience the self (e.g., Hanley et al., 2017; Nour et al., 2017) influence connectedness. At the very least, it is important to recognize that there is mounting evidence that self-related phenomena are an important part of the formation of connectedness. OEE programs might find it useful to consider including lessons that challenge participants to change how they think about nature and challenge them to change how they think about themselves. After all, connectedness fundamentally involves our sense of self.

However, there is a degree of nuance to the relationship between self and nature. In some cases, paying attention to the self promotes connectedness (e.g., private self-awareness), and in others, it hinders it (e.g., public self-awareness). In other words, in the context of connectedness, there may be such a thing as a healthy and unhealthy focus on the self. Activities that make participants think about the self in a way motivated by introspection and curiosity about oneself (c.f., Richardson & Sheffield, 2015) will likely contribute to increased connectedness. In contrast, activities that make participants of OEE feel self-conscious or overly concerned with how they appear to others will likely work against efforts to increase connectedness. Thus, once again, it is important to consider 'process' and deliberately select activities that impact individuals' sense of self in a way that promotes connectedness.

4.2.4.3 Affect and Motivation

The reader may not be surprised to learn that affective states influence individuals' sense of connectedness. A meta-analysis suggests that positive affect is positively correlated with connectedness (see Capaldi et al., 2014). In fact, increased positive affect may be one of the psychological mechanisms through which contact with nature increases connectedness (Nisbet & Zelenski, 2011). Additionally, studies have shown that negative affect is negatively correlated with connectedness (Dopko et al., 2019; Mayer et al., 2009, S2; Nisbet & Zelenski, 2011, S4; Nisbet et al., 2011).

Although it is true that positive affect, in general, has a positive effect on connectedness, research also suggests that it is important to differentiate between different types of positive affect, much like the research on mindfulness. Specific forms of positive affect, such as awe (Nisbet et al., 2019; Yang et al., 2018) or similar types of elevating emotions (Capaldi et al., 2017, S1; Lengieza et al., 2021) are positively associated with connectedness. Moreover, experiencing meaning and purpose, a component of eudaimonic affect, is positively correlated with connectedness (Capaldi et al., 2017, S1; Hinds & Sparks, 2009; Howell et al., 2011, S1–2; Nisbet et al., 2011, S1 & S3). Hedonic affect, on the other hand, was no longer associated with connectedness after controlling for eudaimonic affect (Lengieza et al., 2021), suggesting that not *all* forms of positive affect will promote connectedness. The reader will also recall that hedonic activities, such as waterskiing, playing in nature, and going to the beach, were not associated with increased connectedness to nature, despite involving contact with nature, which may be because of their emphasis on hedonia, although this is largely speculative. Thus, there is tentative evidence suggesting that placing an undue and undiscerning focus on any and all positive affect may be unwise.

Applications to OEE: Affect

Affect is an important determinant of connectedness. Positive affect has been shown to promote connectedness (e.g., Nisbet & Zelenski, 2011), whereas negative affect diminishes it (e.g., Nisbet et al., 2011). In other words, the research on affect clearly suggests that any given OEE program will only be effective at increasing connectedness to the extent that it is experienced positively by participants. At the absolute least, it seems important that a program is not experienced as wholly negative. Still, the research suggests that there is value in considering nuances in similar types of emotions—once again, highlighting the importance of focusing on the underlying process. Ideally, OEE should focus on creating higher-order affective experiences—experiences consistent with elevation and eudaimonia, such as awe, curiosity, fascination, compassion, hope, etc.—because those may be the most likely pathway to influence connectedness.

4.2.5 Individual Differences that Influence Connectedness

Several individual differences are associated with connectedness. These individual differences include demographic characteristics (e.g., age, gender, race, & socio-economic status), personality, and various worldviews (e.g., attitudes, beliefs, & values). OEE practitioners may wonder whether OEE programming needs to be tailored to different groups (i.e., whether certain individual differences moderate the effectiveness of OEE programming on connectedness). Additionally, OEE program evaluators may also wonder what extraneous influences should be accounted for when evaluating the success of a program (i.e., individual differences for which we should control). The research on individual differences outlined in this section will hopefully be informative for both considerations.

4.2.5.1 Demographics

As antecedents to connectedness, demographics are important because they can inform decisions about whether programs need to be tailored to different demographic groups. Although, to set expectations at the outset of the section, there may be little evidence to warrant tailoring programs in any substantial manner.

Age

Age may influence individuals' sense of connectedness. Studies with adults indicate that age is either positively associated with connectedness (Beery, 2013; Burbach et al., 2012; Diessner et al., 2018; Harvey et al., 2016; Lumber et al., 2017; Nour et al., 2017; Sanguinetti, 2014; Zhang et al., 2014, S1–2) or not at all (Brown, 2017; Bruni et al., 2008; Dutcher et al., 2007; Mayer & Frantz, 2004; Swami et al., 2016; Unsworth et al., 2016, S1–2; Walters et al., 2014; Weinstein et al., 2009, S1–3; Whitburn et al., 2019). In other words, studies with adults do not tend to find an actively negative relationship between age and connectedness. In contrast, studies with school-aged children indicate the opposite; connectedness tends to be higher among younger children than older children (Braun & Dierkes, 2017; Crawford et al., 2017; Larson et al., 2018; Liefländer et al., 2013). Together, this pattern of results suggests that children temporarily grow out of their connection to nature, so to speak, as they enter adolescence and young adulthood, after which they begin to re-connect with nature (see Hughes et al., 2019, for evidence from data across the lifespan).

Although age, like other demographic characteristics, may moderate the effect of participation in outdoor activities, there is not much evidence to suggest that this is the case. The authors know of only two studies in which age moderated any effects. In one, regular participation in outdoor activities—versus nonregular participation—may only matter for older age groups (Beery, 2013). In another, much more

relevant to OEE, the short-term effectiveness of OEE programs was slightly different for different age groups (Braun & Dierkes, 2017). Shorter programs were more effective for older participants than younger participants, and longer programs were more effective for younger participants than older participants (Braun & Dierkes, 2017). Unfortunately, this study included a number of tests without statistical adjustment and did not report in statistical detail; therefore, it is hard to interpret these results meaningfully. Thus, there may not be a reason to tailor the psychologically informed elements of OEE to different age groups beyond those dictated by differences in developmental and educational needs amongst different ages and by common sense.

Gender

Gender might also affect connectedness, although the evidence is not as easily interpreted. For the most part, the evidence often suggests that women feel more connected to nature than men (Beery, 2013; Bruni & Schultz, 2010, S3; Crawford et al., 2017; Hughes et al., 2019; Mayer et al., 2009, S2; Nour et al., 2017; Pensini et al., 2016; Sanguinetti, 2014; Schultz & Tabanico, 2007, S3–4; Spendrup et al., 2016; Swami et al., 2016; Zhang et al., 2014, S1) than it suggests men feel more connectedness than women (Larson et al., 2018; Wyles et al., 2019). However, many studies also report no differences between men and women (Barton et al., 2016; Bruni & Schultz, 2010, S1–2; Bruni et al., 2008; Davis & Stroink, 2016a, b; Di Fabio & Kenny, 2018; Diessner et al., 2018; Duffy & Verges, 2010; Frantz et al., 2005; Harvey et al., 2016; Liu et al., 2019; Lumber et al., 2017; Mayer & Frantz, 2004, S1–2; Mayer et al., 2009, S1 & S3; Unsworth et al., 2016, S1–2; Vess et al., 2012; Weinstein et al., 2009, S1–3; Whitburn et al., 2019; Zhang et al., 2014, S2).

Thus, it is hard to say whether women and men differ in their connectedness; at the very least, men are not likely to feel more connected than women. There is also no evidence that gender moderates any effects in any studies reporting on gender and connectedness (e.g., Mayer et al., 2009; Duffy & Verges, 2010; Vess et al., 2012; Capaldi et al., 2014) cited in this chapter. This suggests that OEE's impact on connectedness may not differ between women/girls and men/boys and that there is likely no need to create unnecessarily gendered programming.

Other

There are three currently understudied demographics—level of education, race/ethnicity, and socioeconomic status—which may be valuable to note in this review. Level of education might not influence connectedness (Beery, 2013; Dutcher et al., 2007; Mayer & Frantz, 2004, S1; Nour et al., 2017; Walters et al., 2014; Whitburn et al., 2019); however, a few correlational studies have found that connectedness

decreases as the level of education increases (Brown, 2017; Sanguinetti, 2014). Similarly, there might be no relationship between race/ethnicity and connectedness (Weinstein et al., 2009, S1–3; Whitburn et al., 2019; Taylor, 2018), but one study suggests that white participants report greater connectedness compared to non-white participants (Larson et al., 2018). Likewise, there might be no relationship between connectedness and socioeconomic status (Wyles et al., 2019) or income (Beery, 2013; Dutcher et al., 2007; Mayer & Frantz, 2004; Walters et al., 2014), but yearly income and homeownership were negatively associated with connectedness in one study (Whitburn et al., 2019). Thus, it would be premature to draw conclusions about the effects of level of education, race/ethnicity, and socioeconomic status on connectedness.

However, while there is limited evidence to suggest there are meaningful differences in the ability to connect to nature across these demographic groups, this is not to suggest there are no differences in access to nature across these groups. The chapter emphasizes that contact with nature is an important antecedent to connectedness, suggesting that a lack of access to nature may affect connectedness. Inequities experienced by these groups should be considered by OEE practitioners when designing programs to be aware of the power and privilege dynamics present when working with historically underrepresented learners. Further, quantitative research may not fully capture the experiences of intersecting identities on connectedness. Future work in psychology and OEE on individual differences should take an intersectional and critical approach to these topics. Finally, insights from OEE practitioners and evaluators might be able to provide valuable contributions to our understanding of the influence that these demographic characteristics might have on connectedness.

Applications to OEE: Demographics

There is evidence that our age influences how connected to nature we feel. There is also relatively ambiguous evidence that gender might influence connectedness, although it is possible that there is no effect. However, demographics seem primarily important to consider in the context of OEE because they might affect how different individuals experience the same OEE program. At present, there is little evidence to suggest that this is the case. Still, program evaluators may want to remain cautious and control for differences in gender composition between various studies, particularly when comparing different programs. For example, women/girls *may* be more likely to self-select into programs that focus on nurturing nature or artistic engagement with nature (both related to research highlighted in the activities section), and men/boys might be more likely to self-select into programs that focus more on science education. Thus, when comparing such programs, it might be necessary to rule out the influence of differences in gender composition if the programs appear to have a different effect on connectedness.

4.2.5.2 Personality

Individuals' personality characteristics influence connectedness. Like the point illustrated in the section on gender, these factors seem primarily important to consider in program evaluation, at least to the extent that individuals with certain personalities are more likely to self-select into one type of program.

The relation most frequently reported in the literature is a positive association between openness to experience and connectedness (Brick & Lewis, 2014; Di Fabio & Bucci, 2016; Forstmann & Sagioglou, 2017; Lee et al., 2015; Nisbet et al., 2009; Nour et al. 2017; Richardson & Sheffield, 2015; Tam, 2013; Zhang et al., 2014, S1). It also appears that connectedness is positively associated with agreeableness (Brick & Lewis, 2014; Di Fabio & Bucci, 2016; Nisbet et al., 2009; Tam, 2013; Zhang et al., 2014, S1) and conscientiousness (Brick & Lewis, 2014; Di Fabio & Bucci, 2016; Forstmann & Sagioglou, 2017; Nisbet et al., 2009; Tam, 2013; Zhang et al., 2014, S1). Finally, comparatively limited evidence suggests that other facets of personality—humility (Lee et al., 2015; Brick & Lewis, 2014), emotionality (Brick & Lewis, 2014; Tam, 2013), extraversion (Nisbet et al., 2009, S1; Tam, 2013; Zhang et al., 2014, S1) and (less) neuroticism (Zhang et al., 2014, S1)—are also positively associated with connectedness.

Applications to OEE: Personality

Individuals' personalities affect their sense of connectedness to nature. Although personality cannot be feasibly targeted for intervention and is so varied that it is not practical to tailor programs to different personality profiles, it may still be important to keep the association between personality and connectedness in mind for OEE. Specifically, it is likely most important for program evaluators. Much like gender, there is the possibility that individuals with certain personality characteristics might self-select into one type of program over another. For example, if one were to compare a more traditional OEE experience to a less traditional and more overtly non-mainstream program (e.g., "outdoor mindfulness environmental education"), it would be wise to account for—or at least consider—whether one program has more individuals who are higher in openness to experience. In this case, the mindfulness program seems like it might attract more individuals who are high in openness to experience and, based on the research above, are, therefore, more likely to already be high in connectedness.

4.2.5.3 Worldviews

Worldviews—that is, our beliefs, attitudes, orientations, and values (Clayton & Myers, 2015)—influence connectedness. Echoing the preceding sections, research in this domain is informative because it can identify potential moderators of the effects of OEE programming on connectedness. However, research on individual

differences in worldviews has the potential to provide a unique set of insights relative to demographics and personality. Namely, while demographics and personality are largely immutable and not practical points of intervention, worldviews have a greater degree of mutability and, therefore, may pose additional leverage points in efforts to enhance connectedness. In other words, reviewing this research is valuable because it may identify additional, indirect avenues toward increased connectedness (e.g., focusing on increasing OEE participants' reliance on systems thinking or their tendency to appreciate natural beauty).

Perhaps intuitively, positive environmental beliefs are positively associated with connectedness (Brick & Lewis, 2014; Bruni & Schultz, 2010; Clayton et al., 2011, S1; Davis & Stroink, 2016a, b; Davis et al., 2011; Frantz et al. 2005; Lee et al., 2015; Mayer & Frantz, 2004, S1, 2; Nisbet et al., 2009, S1; Whitburn et al., 2019). Additionally, there is a positive association between connectedness and the tendency to appreciate natural beauty (Capaldi et al., 2017, S1–2; Diessner et al., 2018; Lumber et al., 2017; Zhang et al., 2014, S1–2), more liberal political orientation (Dutcher et al., 2007; Nour et al., 2017), and a more empathic disposition (Di Fabio & Bucci, 2016; Di Fabio & Kenny, 2018; Mayer & Frantz, 2004, S2 & S4). In contrast, connectedness is negatively associated with more conservative political orientations (Brick & Lewis, 2014), more authoritarian views (Nour et al., 2017), a greater orientation toward consumerism (Mayer & Frantz, 2004, S4) or materialism (Hedlund-de Witt et al., 2014), and (among women) personally ascribing to the feminine beauty ideal (Scott, 2010, S1–2).

Connectedness is also positively associated with worldviews that are associated with self-transcendence. Specifically, connectedness shares a positive association with self-transcendent values (Tam, 2013), connecting to something greater—for example, connectedness to one's community (Sanguinetti, 2014) and connectedness to humanity (Lee et al., 2015; Lengieza et al., 2021)—and greater moral expansiveness (Crimston et al., 2016). Moreover, connectedness is often positively associated with non-self-interested concern for nature (e.g., biospheric concern; Davis & Stroink, 2016a, b; Mayer & Frantz, 2004, S4–5). In contrast, connectedness to nature is often not associated with self-interested concern for the environment (e.g., egoistic concern; Davis & Stroink, 2016a, 2016b; Duffy & Verges, 2010; Mayer & Frantz, 2004, S4; Schultz & Tabanico, 2007, S1–2)—and might even be negatively associated with such concern (Mayer & Frantz, 2004, S5; Schultz & Tabanico, 2007, S1)—and shares a negative association with self-enhancement values (Tam, 2013). Individuals' spirituality might also be positively associated with connectedness (Brown, 2017; Hedlund-de Witt et al., 2014). However, some studies report no effect (Vess et al., 2012, S1–3), and religious fundamentalism appears to be negatively associated with connectedness, although this was only under conditions of mortality salience (Vess et al., 2012). Lastly, individuals who are more prone to rely on systems thinking tend to report higher levels of connectedness (Davis & Stroink, 2016a).

In this chapter, we will not consider differences among more broad cultural world views (such as differences in Western ways of knowing and Indigenous knowledge systems) because such a discourse would fill an entire book on its own.

However, we do not want to diminish the importance of the effects of epistemological and ontological differences on relationships to the natural world. We would recommend that readers take the time to explore this rich body of literature.

Applications to OEE: Worldviews

This section suggests that the way we view the world impacts our connectedness. In the context of OEE, this might suggest that incorporating programming that targets any one of the worldviews noted above *might* also affect connectedness. Most relevant to OEE, programming aimed at increasing participant's appreciation for natural beauty (e.g., Capaldi et al., 2017), systems thinking (e.g., Davis & Stroink, 2016a), biospheric concern (e.g., Mayer & Frantz, 2004), or environmental attitudes (e.g., Nisbet et al., 2009) might spill over into increased connectedness as well. Additionally, it suggests the possibility of targeting more domain-general worldviews such as empathy (Di Fabio & Kenny, 2018), spirituality (Hedlund-de Witt et al., 2014), or even minimalism (i.e., as a contrast to consumerism; Mayer & Frantz, 2004) to support increases in connectedness.

However, it should be noted that there is an implicit causal assumption underlying these speculations, which needs to be investigated. It might be true that changes in systems thinking, for example, will *cause* changes in connectedness. But it is also possible that the associations reviewed in this section instead reflect those changes in connectedness will *cause* changes in these worldviews (see Schultz et al., 2004). Moreover, it is still possible that neither case is the reality. The associations in this section may merely reflect associations between connectedness and worldviews and some third variable, such as personality. Thus, while it is exciting to consider the possibility of simultaneously targeting systems thinking and connectedness—with the former reinforcing the latter—we would be wise to carefully evaluate the effectiveness of such practices before encouraging their widespread adoption.

Relatedly, there is little to no evidence—mostly out of a lack of research rather than reported null effects—that worldviews moderate the effects covered in this chapter. However, it is hard to shake the intuition that certain individuals may tend to experience the same activity differently. For example, individual differences in appreciating natural beauty might influence the effect of engaging with nature artistically (c.f., Bruni et al., 2017). Thus, when designing OEE programming to enhance connectedness using artistic engagement with nature, one should foster an appreciation of natural beauty as a precursor to artistic engagement with nature, at least in theory. However, more evidence is necessary before such approaches should be adopted widely.

4.3 Empirical Psychological Research on Environmental Education and Connectedness

Some empirical studies have looked at the effect of environmental education, not necessarily exclusively OEE, on connectedness to nature. In general, studies tend to conclude that environmental education is associated with increases in connectedness (Braun & Dierkes, 2017; Cho & Lee, 2018; Crawford et al., 2017; Dopko et al., 2019; Johnson-Pynn et al., 2014; Lankenau, 2018; Liefländer et al., 2013; Mayer & Frantz, 2004; Otto & Pensini, 2017; Sellmann & Bogner, 2013; Mullenbach et al., 2019; Pirchio et al., 2021). There are, however, some exceptions, with some studies showing no effect of participation in environmental education (e.g., Ernst & Theimer, 2011). Importantly, the literature evaluating the effects of various educational interventions often lacks control groups and has other methodological and statistical limitations that make it especially important to consider insights found within environmental psychology (see Barrable & Booth, 2020 for a similar critique).

Moreover, beyond methodological limitations, there is much that the literature on OEE and connectedness has yet to fully reveal. For example, we do not know what kinds of programs—broad versus specific, intermittent versus back-to-back, commute versus overnight, etc.—will lead to the largest increases in connectedness. However, there is limited evidence that longer programs might be more effective at fostering connectedness (e.g., Braun & Dierkes, 2017; Johnson-Pynn et al., 2014). This effect may be attributable to several things, such as more impactful content, more immersion, or some other element that differs between longer and shorter programs, but the exact reason for this effect requires further research.

Once again, knowing the underlying process of this effect would only be beneficial. If it turns out that longer programs result in greater connectedness because longer programs simply afford more contact with nature, then merely extending programs should effectively harness this effect, and conversely, shorter programs will always fall short. However, it could turn out that the reason longer programs are more effective is that, by having more time, they are stochastically more likely to involve some experience that is meaningfully impactful for some individual. If this were the case, then it would not be enough, or rather would not be efficient, to simply extend the length of programs. Instead, it would be wise to deliberately create experiences that are meaningful to participants (e.g., eudaimonic reflection) rather than relying upon chance. More importantly, this would imply that one need not artificially lengthen OEE programs and that shorter, potentially more accessible, or practical (c.f., Braun & Dierkes, 2017) programs might be able to be made more impactful.

4.4 Discussion

The psychological research on the predictors of connectedness to nature can offer OEE planners and practitioners a wealth of knowledge. We have offered summaries throughout the chapter to highlight the application of each specific subset of research to OEE. Here, we provide some additional broader conclusions from this chapter, which can be broken into implications for program planning and evaluation.

4.4.1 Planning

One noteworthy over-arching concern is how we can make OEE more accessible in an increasingly urbanized world. As the world becomes more urbanized, natural spaces dwindle, as does access to such spaces. While some communities can continue to afford access to wild and natural spaces, many communities cannot, especially those found in more urban environments. Thus, it is particularly important to consider how we can make effective OEE accessible to all communities.

While urban communities may not have access to the same types of nature as other communities, the promise shown by technologically-aided (e.g., video and perhaps VR as well) means of experiencing nature (Ahn et al., 2016) represents a hopeful opportunity to make 'nature' more accessible. Yet, it is undeniable that urban communities may not have access to the same technological tools as other communities. Still, the research suggests, at the very least, that efforts to secure funding to bring nature into the urban OEE classroom via technological advances would be well justified.

Additionally, beyond technology, other insights may be important to consider in attempts to make *effective* OEE more accessible in an urbanized world. Indeed, while research suggests that the quality of the natural space is an important determinant of connectedness to nature (Wyles et al., 2019), there are a number of potential ways to further enhance the experience. For one, immersion seems to influence the effect that situations have on connectedness (Weinstein et al., 2009). Thus, any practice that enhances learners' immersion in *nature* should make the experience all the more effective. Similarly, the activities in which one engages while in nature make a difference. Things as simple as deliberately noticing nature (Passmore & Holder, 2017), caring for nature (Whitburn et al., 2019), or even mindfully learning about nature (c.f., Wang et al., 2016) should further enhance the experience. Additionally, meditation seems capable of enhancing connectedness even in the absence of nature and, therefore, poses an interesting possibility of having home-based activities supplement urban OEE programs. In sum, there are several ways that the efficacy of OEE programs can be enhanced in terms of connectedness to nature. We hope that this chapter will help program planners identify potential avenues for increasing accessibility to connectedness-fostering OEE programs.

This, however, raises another point that cuts across the entire chapter—the importance of considering the *process* that underlies an activity or program feature's effect on connectedness. Once again, we stress the importance of considering *why* an activity should affect connectedness before implementing it. For example, suppose one is considering assigning meditation-based 'homework' as part of an OEE program. In that case, one should consider: "What is this meditative practice going to do that will lead to greater connectedness?" or "Is this meditative practice going to do anything that might inadvertently hinder connectedness?"

Suppose the answer is, for example, "Research shows that this specific form of mediation will improve participants' mood and soften their sense of self". In that case, the practice is easily justified because it creates a desirable chain reaction; both positive mood (Capaldi et al., 2014) and softened self–other boundaries (c.f., Hanley et al., 2017) are positively associated with connectedness to nature. In theory, the meditation should increase mood and soften self–other boundaries, which should, in turn, result in greater connectedness. In contrast, suppose the answer is, "Research shows that this specific form of mediation enhances public self-awareness and acting with awareness". In this case, the activity would be unwise because the chain reaction is undesirable; public self-awareness seems to work against connectedness (Lengieza & Swim, 2021), and "acting with awareness" is one of the facets of mindfulness that is not associated with connectedness (Barbaro & Pickett, 2016). Thus, when selecting activities that should enhance the efficacy of urban OEE programs, it is important to consider the underlying process—the chain reaction, as it were—to ensure that the chosen activity or program feature is well-considered.

The final point worth mentioning with program planning is to reiterate that a learner's subjective psychological experience is just as, if not more, important than "objective" reality. In light of findings that 'higher quality' natural areas are more positively impactful on connectedness or that greater immersion leads to greater connectedness, finding the *objectively* highest quality and most immersive natural space may be tempting. However, such a focus would be misguided. Moreover, to illustrate, a personal anecdote seems most effective as an example. The first author recalls setting up a study where some participants were to walk in some of the wooded trails found within the Penn State Arboretum. He was surveying the trails with his contact at the arboretum, B., when B. casually noted that "unfortunately, there aren't too many places here where you can't see a university building or someone's house from the trail. But I'll tell you. I don't think that your students will notice. We have volunteers help out on the weekends, and I swear, they are always commenting that they feel like they're in the middle of nowhere. Even though there's a main road only a few hundred feet on either side."

What B. observed anecdotally exemplifies that what counts as high quality and immersive nature for some is often different from objective reality. Even more, it highlights that for individuals who are already connected to nature—such as B., who worked in a profession that stems from a love of nature, such as OEE professionals—our standards may be higher, or at least out of touch, with the public's experience of the same place. It is entirely likely that for someone who has spent their entire childhood in an urban environment, the small but well-vegetated park

across the street might *feel* like "wild nature". However, the only way to *know* how learners perceive a space or activity is to ask them. Thus, this serves as a nice segue into the second set of considerations: Evaluation.

4.4.2 Evaluation

It is impossible to strive for a goal without having some means of evaluating one's progress toward that goal. Moreover, progress toward a goal is only most effective when one deliberately and thoughtfully attempts to determine which strategies are working and which strategies are not. Thus, if promoting connectedness to nature is to persist as one of OEE's goals, programs must evaluate their progress toward that goal and attempt to document which strategies are and are not working. Thus, empirical program evaluation should be a central part of OEE's attempts to increase connectedness to nature. Here, we offer some additional considerations specific to OEE program evaluation.

More than once in this chapter, we noted that research on OEE can not only benefit from considering the psychological literature on connectedness but can also potentially inform that very literature itself. Thus, we come from the perspective that OEE evaluation efforts should strive for the highest level of evaluative rigor using methods and analyses appropriate to the program and evaluation goals. From a quantitative perspective, it would be important that evaluation efforts make attempts to include some form of a control group. Ideally, this would be an active control group, although it is often only possible to use a passive control group (e.g., waitlist controls). It would also be ideal for evaluation efforts to include random assignment to treatment and control, wherever possible. In cases where random assignment is simply not possible, it is incredibly important to consider carefully—and ideally, rule out—the possibility of self-selection creating the false appearance of program success (as noted in preceding sections). From a qualitative perspective, using appropriate open-ended written and verbal assessments is key, along with following up such assessments with a formalized coding scheme to distill the main takeaways from participants' experiences. Finally, mixed methods could be used to draw on the unique benefits of both quantitative and qualitative means of evaluation. Together, these considerations are especially important because, without adequate empirical rigor, it is impossible to know which strategies are working and which strategies are not. We want to be confident that the strategies we are incorporating are actually effective. Relatedly, evaluation efforts will be most informative if they consider the *process* (as emphasized above). The better we document which program elements work and *why* those processes work, the more effectively we can implement those strategies into other programs.

4.5 Conclusion

The intersection of environmental psychology and OEE represents the potential for a symbiotic relationship whereby theory on connectedness to nature can improve OEE programs, and applications of such theory in OEE can, in return, increase the robustness of the theory. In this chapter, we focused on the first part of this interdisciplinary relationship by showing how psychological insights can aid OEE programs in increasing connectedness in their learners. In each section of the chapter, we highlighted ways to apply these insights to OEE programs and emphasized the importance of carefully considering *why/how* a program feature will promote connectedness (i.e., process) to ensure well-justified program planning.

The insights highlighted in this chapter present many exciting possibilities for the future of OEE. Specifically, literature has shown that contact and engagement with nature (e.g., either first-hand or virtually) as well as reflective programming (e.g., meditation, mindfulness, introspection, eudaimonic reflection) and meaningful activities (e.g., noticing nature or nurturing nature) can contribute to increases in connectedness to nature. Any number of these elements can likely be incorporated into OEE programming with ease and will hopefully aid in attempts to promote connectedness to nature. Overall, the plethora of ways to promote connectedness lends itself to the variety and creativity of OEE programs and suggests the beginning of a productive interdisciplinary relationship between environmental psychology and outdoor environmental education.

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Chapter 5
How Education Can Be Leveraged to Foster Adolescents' Nature Connection

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5.1 Introduction

Our aim in this chapter is to present an overview of the importance of nature connection for adolescents (12–18 year olds). This target group is a well-considered choice since the interest in nature dips in adolescence (e.g., Olsson & Gericke, 2016; Krettenauer et al., 2020). In this chapter, we bring together key insights from different disciplines on the relevance of nature connection in adolescence, in particular from the health- and education sciences perspectives. First, we will clarify the terminology used in this chapter: we will define our use on the concepts 'nature connection' and 'outdoor environmental education' and establish the association between them. What follows is an overview of the importance of nature for adolescents and the prominent role education can play in fostering nature connection in this target group. We will also show that despite the many advantages, several thresholds and levers can be identified in the literature for working on nature connection with adolescents, especially during secondary education. Subsequently, we zoom in on the practical experiences and the obstacles that we identify at

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_5

adolescent, teacher, and school level. We end the chapter with practical recommendations for the actors involved to promote nature connection in secondary education.

> *We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect. (Leopold, 1949).*

The relevance of feeling connected to nature is a prominent subject in the works of ecologists and ecopsychologists (Mayer & Frantz, 2004). In line with Kleespies and Dierkes (2020) we distinguish two dimensions within the concept of nature connection. On the one hand, the emotional and psychological relationship of an individual to nature, where nature can be seen as part of ourselves. On the other hand, the behavioral dimension: taking care of nature. Consistent with Mayer and Frantz (2004), we pose that if people feel part of the wider natural world, they are more likely to address environmental issues effectively. Consequently, nature connection is an essential part of promoting pro-environmental behaviour.

Outdoor environmental education (OEE), as defined in this book, is any environmental and sustainability education (ESE) program intentionally using the outdoor (both natural and urban) environment as the main source of learning related to ESE-aims. We focus on various forms of OEE in this chapter, including residential programs, community-based programs, inquiry-based learning programs in the natural environment, as all these programs have the potential to affect nature connection in adolescents (Bergman, 2016).

The importance of nature connection for the development of adolescents is repeatedly emphasized in scientific literature. Both for health, wellbeing, and school performance, as well as building the fundaments for a sustainable, pro-environmental attitude as a citizen (Barrable & Booth, 2020). Learning in and about nature holds great potential for stimulating nature connection among adolescents. It can contribute to long-term and intrinsic motivation among citizens to take up a commitment to protect and conserve (local) nature. On the other hand, nature can also have disadvantageous impacts on the health of adolescents such as physical discomfort and anxiety.

Because of the health and educational benefits, OEE is receiving more and more attention, also when it comes to health inequality: unequal access to or proximity to green space in the residential or learning environment can contribute to health inequality. Additionally, many studies have shown that informal nature experiences and experiences in natural environments during adolescence are consistently regarded as the most important formative experience and lay a foundation for environmentalism (Clayton et al., 2019). Nature connection seems to be a key element and the educational system lend itself well to deploying this concept democratically among all students. Our argument is therefore that leveraging education to foster nature connection makes an important contribution to counteracting health inequalities among adolescents.

5.2 Importance and Relevance of Nature Connection for Adolescents

Recently, Marselle et al. (2021) presented a model that helps to categorize the many effects nature connection can have on adolescents. We use their model to discuss these effects specifically for the target group of our current chapter, adolescents, on:

1. health,
2. school performance,
3. environmental citizenship.

The life stage of adolescents is characterized as a challenging period with many changes at the cognitive, social, emotional and physical level. It is a pivotal time in identity development and a period associated with high levels of stress. The latter is exactly why the impact of nature is even more relevant for this target group. Finally, the school – a place where adolescents spend a lot of time – is an important context where this development can be facilitated and supported (Verhoeven et al., 2019).

Krettenauer et al. (2020) talk about a time-out in adolescents'nature engagement and identify as a fairly universal fact. Also, Scandinavian research that explicitly takes the perspective of adolescents in focus shows that themes such as environmentalism are subject to what is called an 'adolescent dip' (Olsson & Gericke, 2016). Whereas children at the end of primary school are open to these topics both in terms of interest and attitude, there is a significant decline among adolescents in secondary education. Research confirms that the dip never recovers to the level observed in primary school children (Olsson et al., 2019). This highlights again the importance of stimulating nature connection among adolescents.

5.2.1 Health

Literature shows that nature connection leads to better physical and mental health (see e.g., Barrable & Booth, 2020; Kleespies & Dierkes, 2020). According to Kuo et al. (2019) nature connection decreases stress levels in adolescents. In addition, it results in the experience of a better emotional state and an overall higher experience of subjective quality of life (McCullough et al., 2018; Luís et al., 2020).

The improvement in mood by spending time in nature could be partly explained by the fact that exposure to sunlight triggers a production of vitamin D, and therefore an improved overall mood. Other physiological effects of exposure to nature are a reduced number of heart beats per minute, reduced blood pressure and a decrease in the concentrations of the stress hormone cortisol. These physiological effects generally go along with a state of enhanced relaxation of the body (Yao et al., 2021).

As Marselle et al. (2021) highlight, we should also recognize that nature can have adverse effects for the health of adolescents. Adolescents may get various insect bites after seeking out nature, or the cold or heat can cause discomfort (Winks, 2018). Increased fear of the dangers of nature (wild animals, allergies, nettles, etc.) has also been found to be a consequence of nature contact (Flett et al., 2010). Another health concern that often gains public attention is the nature-related health risk such as infectious diseases (WHO, 2016). Lastly, the creation of a bond with nature can also result in adolescents experiencing fear, sadness, or anger at the sight of destroyed natural areas (Tseng & Wang, 2020).

5.2.2 School Performance

Nature experience at school, starting even as 1 h a week, leads to more productive and emotionally more stable teenagers (Cross et al., 2019). The social abilities of adolescents, who come into contact with nature during school hours, are greatly improved as a result. Adolescents learn to cooperate better, to deal with conflicts better and to take the lead (Fischer et al., 2019).

In addition to the impact of nature connection on the development of social skills, nature connection stimulates cognitive capacities (Bowers et al., 2021). Research shows that OEE facilitates the application of practical knowledge and unlocks creative potential (Aladağ et al., 2021). Furthermore, nature connection is related to adolescents' academic performance. Several studies have shown that spending time in nature or the outdoors improves learning outcomes (Becker et al., 2017; Bowers et al., 2021). OEE improves adolescents' reflective thinking skills for problem-solving and ensures that learning will be more continuous based on the idea that adolescents learn by living and doing with authentic examples and models that nature provides. The positive effect of nature on students' academic performance is due partly to increased concentration and a different method of learning, such as learning in the garden or experimenting in the forest (Luís et al., 2020). Taylor and Kuo (2011) even suggest that spending time in nature may lessen the symptoms of attention deficit hyperactivity disorder (ADHD).

A recent study in Flanders demonstrated the importance of nearby nature for the cognitive development of adolescents (Steunpunt Milieu en Gezondheid, 2020). Adolescents with more nature in their neighborhood (e.g. trees, hedges, parks) scored better on attention tests and showed slower cellular ageing. Some cognitive functions that are important for learning ability and school performance (i.e., working memory and attention span) develop through adolescence (Ullman et al., 2014). Nature, thus, provides adolescents with unique opportunities to develop themselves and to feel better mentally, with positive effects on school performance (Boeve-de & Halbac-Zamfir, 2020).

Lastly, nature connection has a positive effect on the personal development of adolescents. Bowers et al. (2021) report a positive effect of nature on adolescents 'self-confidence, empathy, self-discipline, creativity, and sense of responsibility.

5.2.3 Environmental Citizenship

A combination of the above-mentioned competencies, such as growing empathy, curiosity and responsibility can lead to a more positive attitude towards nature. Various studies highlight the positive effect of school nature contact among adolescents on environmentally friendly attitude (Bahar & Sahin, 2017; Kleespies & Dierkes, 2020).

Nature connection is one of the known predictive factors for sustainable environmental behaviour inside and outside of school, as well as later in life (Uitto et al., 2015). Promoting nature experience during adolescence, e.g., through school interventions, can thus contribute to health and wellbeing at the individual level, but also to a more sustainable society. A recent large study, with adolescents in 100 schools in Belgium, showed a link between green school playgrounds and their knowledge about the environment and nature involvement (Boeve-de & Van Petegem, 2018). Work done in the context of the ENEC COST action points toward nature connection and positive experiences with nature during childhood and adolescence as crucial elements in the formation of environmental citizenship (Hadjichambis et al., 2020).

5.3 The Potential Role of Education in Nature Connection

An important finding in educational research on the role of nature in secondary education is the potential impact the school can have. Boeve-de and Van Petegem (2018) showed that the amount of nature, and the way in which schools work with nature, are meaningful for the nature connection of adolescents in secondary education. Even the mere presence of natural elements (trees, pond, hedges…) in schools stimulates the nature connection of adolescents. Boeve-de and Van Petegem's (2018) results furthermore show that when schools use the available on-campus nature as part of their pedagogical approach, adolescents report a significantly higher degree of knowledge about the natural environment and a more intrinsic motivation to contribute to the protection of nature.

While the previously mentioned study examined the impact of the availability and use of nature at school, there is also research that looks at how teachers can engage in OEE. In their recent update of the powerful learning environment framework (Decorte et al., 2004), Sinakou et al. (2019) emphasize the importance of OEE as an essential component of effective education for sustainable development.

5.4 Thresholds and Levers in Secondary Education

The above information shows that there is a central role for education in general and for the teacher's tasks specifically. However, in practice many difficulties are faced. Using the model of Creemers and Kyriakides (2010), we identify several thresholds and levers when integrating nature connection into the educational system. In what follows, we discuss the thresholds and levers for working on nature connection at three levels: 1) the level of the school policy, 2) the level regarding the learning environment and, 3) the level of the adolescents.

5.4.1 School Policy Level

OEE is largely marginalized in mainstream curriculum-based education in many educational systems. Although some schools do already teach outside or have green playgrounds, the potential to integrate this type of activities into daily educational routines is rarely fully utilized (Bergman, 2016). In spite of the positive effects of environmental education programs in which students spend time in nature, these initiatives bring serious organizational challenges: staggering expectations and obligations from the curriculum often do not allow for more extracurricular experiences than single-shot infrequent field days. Attempts to regularly teach outside based on the curriculum also encounter financial barriers. For example, in addition to an overcrowded curriculum and travel time, the cost of transport and extra teachers also appears to be an obstacle (Becker et al., 2017; Said et al., 2007). As a result, successful implementation becomes dependent on the commitment, efforts and enthusiasm of individual schoolteachers and their headmasters.

5.4.2 The Learning Environment

Adolescents appear to experience more freedom and less conflicts in greener classrooms at school. Nature at school has a positive effect on mental wellbeing because it reduces stress (McCullough et al., 2018). At the same time, a green school design can be used to compensate for the decrease in contact with nature outside the school (Kuo et al., 2019). This greening of schools can be tackled, for example, by the installation of a "green wall" (McCullough et al., 2018) or a large school garden where ingredients for the school kitchen are grown. The latter immediately illustrates and reinforces the relationship between food, health, and nature (Fischer et al., 2019).

In addition, physical proximity is a key driver when it comes to the learning environment. Lessons about nature in the neighborhood and in cooperation with the local environment have been shown to work better than lessons about nature further

away. The focus on local biodiversity provides a connection to adolescents' daily lives (Blanco et al., 2020; Sousa et al., 2016).

OEE can be emancipating. The circumstances outside the classroom are less controllable by the teacher and this requires greater input from the adolescents. Adolescents can, therefore, have more control over their own learning (Winks, 2018). OEE that focuses on natural and altruistic motives increases students' environmentally friendly behavior (Bahar & Sahin, 2017). By this, we mean lessons that focus not on the individual, but on the environment (natural) or others (altruistic). Furthermore, outdoor activities that address the interests of adolescents will lead to more eagerness for environmentally friendly behavior (Bergman, 2016).

Bergman (2016) shows that a teaching approach that focuses less on knowledge and more on the affective and sociocultural viewpoints of students about a particular environmental issue have a greater potential to increase nature connection in the long term. Bergman (2016) thus argues for a broader focus on the affective domain. However, not all teachers feel confident to include OEE in their teaching practice (Blanco et al., 2020). Becker et al. (2017) found that the implementation of OEE in schools is constrained by a shortage of skilled teachers.

In addition, teachers have to develop new teaching materials, adapt existing materials to the local context or rework existing lessons in a new way (Gardner, 2017). Existing schoolbooks are not always sufficiently detailed for teachers to allow for effective implementation. Research indicates that teachers face additional classroom management issues (Gardner, 2017). According to Gardner (2017), teachers worry about order and structure during an excursion or outdoor classes. Providing teachers with tools to set up that structure anyway could remove a barrier here. On the other hand, it is just as important that teachers understand that the structure of a learning activity in outdoor education can differ from activities in the classroom. This understanding can remove barriers.

Nevertheless, all teachers can inspire their students by demonstrating the desired behavior. In this way, they serve as role models for the adolescents. When teachers set certain actions or behaviors, adolescents become more motivated to behave in an environmentally friendly manner (Bahar & Sahin, 2017).

5.4.3 Thresholds and Levers for Adolescents

Some researchers consider nature connection to be a stable personality trait, making it difficult to change it in adolescents through a short school trip or outdoor class (Tseng & Wang, 2020). In addition, externally driven attempts to achieve increased nature connection can also be accompanied by negative feelings such as discomfort, anger, or sadness over the destruction of natural environments (Tseng & Wang, 2020). Therefore, programs that seek to intervene in adolescents' nature connection should take into account many thresholds, levers and possible (also negative) consequences. In this part of our chapter, we discuss the evidence present in the literature regarding

the thresholds and levers that are related to adolescents themselves: socio-economic and family background, gender, interests, and initial levels of nature connection.

Adolescents from families with lower socio-economic status (SES) tend to have less opportunity to engage in natural outdoor environments (Sedawi et al., 2020). They gain less nature experience as they grow up, while research has consistently regarded childhood and adolescence as the most important formative experience to lay a foundation for environmentalism. As we mentioned earlier, unequal access to or proximity to green space in the residential or learning environment can contribute to health inequality (Clayton et al., 2019). Therefore, OEE can provide a solution for more vulnerable adolescents with low SES. As the rules outside the classroom walls are different, adolescents are less likely to be excluded (Norwood et al., 2021).

The results of various survey studies show that girls score slightly higher on nature connection than boys. Girls also seem to be more concerned about nature and the environment than boys are (Sedawi et al., 2020). They also value nature more than boys do, although boys like the activities that take place outdoors more than girls (Sedawi et al., 2020).

In addition to gender, adolescents' interests also play a role in nature connection. People who have an interest in beauty have a stronger connection with nature (Merino et al., 2020). Programs respond to this work on nature connection through artistic work forms by using poetry, music, or nature photography. For example, the literature describes how writing lyrics in a natural environment can increase nature connection (Arbuthnott & Sutter, 2019).

Focusing on what adolescents already find interesting, builds a bridge to more contact with, and appreciation for, nature. Activities that lend themselves to this include skateboarding, skiing, sledding, building camps, making a snowman, canoeing, kayaking, water skiing, diving, rafting, camping, and geocaching (Flett et al., 2010). However, it is also important to provide adolescents with new experiences in nature. Many adolescents derive satisfaction and admiration from things they can do for the first time (Thomas et al., 2014). During an activity in nature, adolescents want to feel successful and enjoy being able to do things on their own (Flett et al., 2010). Adolescents indicate that connecting with nature is different for everyone. Some want to lie in the grass, others just want to look at nature, and others want to be active and climb mountains (Tseng & Wang, 2020). Thus, differentiation is key.

Finally, the initial level of nature connection of adolescents contributes to the impact of OEE. Adolescents who already experience a high level of nature connection gain less from a nature excursion compared to the group of adolescents with a lower initial level of connection (Barrable & Booth, 2020). For example, the study by Kleespies and Dierkes (2020) found that feeding sheep greatly increased the relationship between nature and adolescents with initial low nature engagement, but decreased the relationship between nature and adolescents with initial high engagement. Providers and facilitators of OEE should be aware of the level of nature connection of adolescents in order to provide tailored activities.

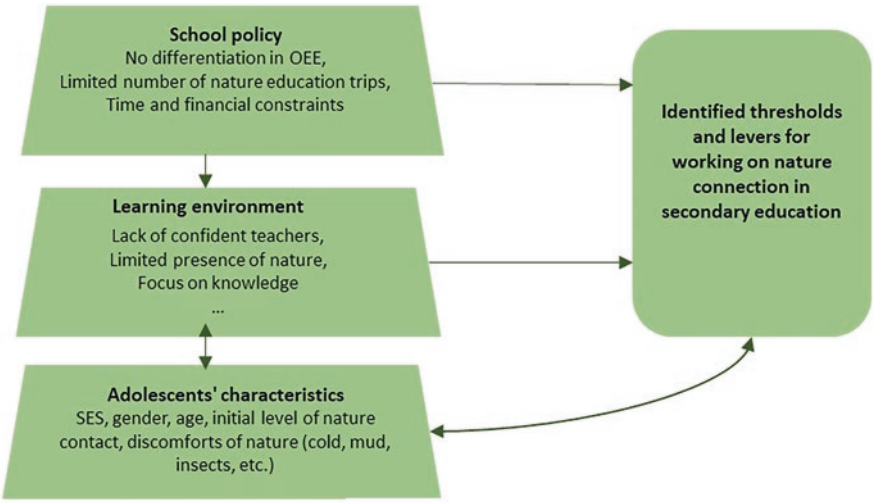

Fig. 5.1 Visualisation of the identified thresholds and levers for working on nature connection with adolescents in secondary education based on the literature, according to the model of Creemers and Kyriakides (2010)

Lastly, adolescents with a strongly developed nature connection can inspire their peers (Thomas et al., 2014). Going into nature together with friends provides an additional positive appreciation of the experience (Flett et al., 2010).

In conclusion, there are many aspects that can interfere with or enhance nature connection and sustainable- and environmentally friendly behavior through education. Figure 5.1. briefly summarizes these barriers.

5.5 Recommendations for Policy and Practice

In what follows, we outline recommendations for a future perspective based on the insights in this chapter. The common thread across all levels is the need for cooperation both within a given level (horizontal: e.g., cooperation between different departments) as well as between the different levels (vertical: e.g., between schools and their local environment).

Educational policy makers at national, regional, and local level

- Support bridging the gaps between the learning environment and nature, which currently exists in many schools. To this end, increase subsidies and support greening projects for schools and their surroundings. Local authorities, spatial planners or mobility policies should pay attention to creating a greener environment around schools, as well as greener routes to reach schools. In addition bridgebuilding can focus on the sectors of healthcare and environmental care, where potential win-wins can be detected, complementary to bridging the education – nature gap.

- Infuse connectedness to nature into national curricula for (sedondary) education, and/or highlight how the curriculum offers opportunities for schools and teachers to include OEE in their educational practice.

Schools

- Offer lessons to adolescents on the importance of nature for their academic performance and physical and mental health. The integration of nature connection in the school's health policy can be pivotal. You can rely on partners such as educational guidance services or the expertise of nature education centres.
- Support teacher (teams) to build confidence in OEE, e.g. through continued professional development.

Teachers

- Experiment with implementing diverse OEE activities to the attainment targets and curricula, preferably across different subject areas.
- Increase adolescents'interest in nature by focusing in OEE not only on knowledge, but also on experience. Learning by doing research in and about nature, in which adolescents themselves produce knowledge and not only reproduce it, ensures a greater motivation to act for the protection of nature. In doing so, be creative with the attainment targets, by linking the various nature-educational activities across different subjects to attainment targets.

Open/Ongoing questions and challenges regarding this aspect

- The potential importance of green playgrounds for students' mental well-being.
- Advocate the integration of a systematic evaluation of adolescent nature connection in the educational functioning of the centers. By monitoring the nature connection of adolescents, we gain a deeper insight into the effectiveness of these programs.
- A better integrated view on education, learning capacity, environmental care, and healthcare.

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Chapter 6
Outdoor Environmental Education in the Anthropocene: Beyond In/Out

Michael Paulsen

6.1 Introduction: Anthropocene Perspectives on Outdoor Environmental Education

We are now living in a geological epoch called the Anthropocene (Crutzen & Stoermer, 2000; Crutzen & Schwägerl, 2011; Steffen et al., 2011b, 2016; Zalasiewicz et al., 2008; Morton, 2016; Ellis, 2018; Paulsen et al., 2022). In this epoch, many humans, through their activities and technologies, have begun to affect the life-critical zone of the Earth more than ever before, and more than anything else (Steffen et al., 2006, 2011a; Oreskes & Conway, 2011; Lin, 2010; McNeill & Engelke, 2016; Latour, 2017). My aim in this chapter is not to discuss the "Anthropocene thesis" in detail or its general pedagogical implications. I and others have done so elsewhere (Chakrabarty, 2015; Jickling et al., 2018; Paulsen et al., 2022). My aim is to analyze the implications for outdoor environmental education (OEE), which include different forms of place-based education, outdoor education, and environmental education, although they sometimes denote different meanings (Jickling & Sterling, 2017). In particular, I focus on two critical points in the literature on the Anthropocene and discuss their consequences for OEE:

1. In the Anthropocene, there are no living places on Earth that are not in some way affected by human activities. Thus, there is no pure wild world of nature that is untouched by human beings (McKibben, 2006; Morton, 2009; Marris, 2011; Purdy, 2015; Ellis, 2018). This breaks down a range of binary distinctions, such as culture/nature, human/nonhuman, inside/outside, and indoors/outdoors. Thus, there is no longer a purely natural outdoor environment.

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_6

2. The mainstream and predominant way of human life developed in the Holocene epoch, which immediately preceded the Anthropocene, and which started after the last ice age, was increasingly pervaded by *Earth forgetfulness* (Heidegger, 1977; Paulsen, 2019, 2021a; Nørreklit & Paulsen, 2022). Part of Earth forgetfulness is that humans have based social life and education on a sharp distinction between culture and nature and between the human and the nonhuman. Moreover, we have reduced nature and the outdoors to a mere scenic background that is visited as an exotic "out there" – and treated mostly as resources that are manipulated and exploited (Paulsen, 2021b).

In the following, I discuss these two critical themes, the tension between them, and the different but related implications they have for how we understand and endorse OEE. Both emphasize the *deconstruction* (Caputo, 2018) that takes place between indoors and outdoors, and thus serve to criticize mainstream ideas about OEE in so far as the latter relies on the unquestioned sharp distinctions between culture/nature and indoors/outdoors. The result is two different understandings of OEE that go beyond the conventional distinction between in/out.

6.2 Two Sides of the Anthropocene Story

The first critical point described above, that the whole life-critical zone on Earth has become affected by human activities, leads to the idea that the living Earth resembles a gigantic spaceship (Postman, 2011) that we optimize and control through self-produced calamities and dangerous domino effects (Nørreklit & Paulsen, 2022). From this perspective, it is clear that the culture/nature distinction has broken down from within because "pure nature" has disappeared. The critical life zone, which is slightly below and above the surface of Earth, is the zone where all life as we know it exists (Latour, 2017). But this whole zone has become a kind of culture, a human-manipulated spaceship. The implication is that there is no longer a radical difference between indoors and outdoors. For example, moving from a classroom (indoors) to a forest (outdoors) is only a question of moving from something more human-manipulated to something less human-manipulated. Both spaces have been constructed and reconstructed by humans and their interventions.

However, the second critical point described above, that the predominance of human life developed in the Holocene has been characterized by Earth forgetfulness, emphasizes that the very idea of a sharp distinction between culture and nature and the idea that the Earth resembles a human spaceship and is a scenic backdrop for human development and activity are both parts of the same problematic and contingent *world understanding* (Nørreklit & Paulsen, 2022). The core of this world understanding, which became increasingly globally dominant throughout the Holocene, leading to the Anthropocene situation, is that it values humans and some human aspects and forms of life above anything else, while the latter—understood

as nature—is considered a background, scene, or resource only for these human developments (Paulsen, 2021b).

The problematization of this world understanding as specific to the Holocene points toward an openness to a new (post)Anthropocene world understanding that places life at the center and understands different life forms and species as existing on a continuum, all of which are equally valuable and, in principle, open to interspecies dialogues, interactions, and interconnected coexistence (Paulsen, 2022).

I have shown elsewhere that this new world understanding has unfolded in many fields, such as philosophy, art, law, science, education, religion, and history (Paulsen, 2021c, 2022). However, the only point I want to emphasize here is that the arrival of a more life-sensitive world understanding, as an alternative to the predominant technical and human-centered Holocene world understanding, tends to deconstruct the culture/nature distinction in the opposite direction of the idea that the Earth resembles a spaceship. According to this alternative world understanding, there is not an absolute difference between culture and nature; rather, this distinction is a human construct that has shaped some humans' ways of being in the world, which has been characterized by Earth forgetfulness. In this forgetful way of being in the world, on an institutional level, in schools, for instance, humans have tended to forget or neglect that we are living beings who live in the life-critical zone and co-exist with other living beings (Coccia, 2019).

Thus, the second critical point emphasizes that there have never been pure culture, pure human beings, or pure nature. Instead, there has always been a continuum of life, life forms, and species. Furthermore, all that we have understood as culture has always in reality been specific modes of life and the life-critical zone, which could also be considered modifications of nature that are understood not in opposition to culture but as the life-critical zone and thus as a kingdom of "birthness" and life (Coccia, 2019).

From this point of view, the distinctions between culture and nature and indoors and outdoors have been *deconstructed,* not because humans and culture have become predominant, but because many negative anthropogenic effects on transforming and threatening the life-critical zone have increasingly made us aware that the predominant way of being present in the world has been based on a problematic and reductionistic world understanding that developed in the late Holocene, perhaps especially in the West and then spread throughout the Earth (Paulsen, 2021b).

According to this critical understanding of the Anthropocene, the conception of Earth as a spaceship is part of the problem. Accordingly, one could argue that OEE was developed and conceptualized in the late Holocene as supplementary to mainstream education and classroom teaching. Thus, it is based on the same problematic distinction between culture and nature that lies at the heart of the problems encountered in the Anthropocene epoch. At least in so far as OEE explicitly or implicitly conceives of nature as being outdoors, which humans enter from the indoors (Sobel, 2020). In this respect, in OEE, the environment is conceived of as being "out there." Both structurally and conceptually, OEE risks contributing to maintaining the

educational institutionalization of the forgetful scenic and human-centered world understanding, and therefore also the reductionism and exploitation of the Earth (which began in the Holocene and exacerbated in the current Anthropocene) (Paulsen, 2022).

6.3 OOE as Supplementary to Mainstream Education

One example of how late Holocene mainstream classroom teaching was supplemented by OEE could be the following, but of course, there are thousands of other variations (Gilbertson et al., 2022):

Example 1
A teacher teaches the topic "rivers" to a class of students. Teaching starts in the classroom. Students sit in rows behind desks. At the back of the room, stuffed animals are displayed in showcases. The teacher explains what the students will learn today and asks them to open their schoolbooks to the same page. He then explains how rivers work. He writes on the blackboard, and the students take notes. The next day, the teacher goes with his students to a nearby river. Here, the students are asked to fill test tubes with water, animals, and plants in the river. The students also enjoy the outdoor landscape. Finally, the class returns to the classroom. Indoors, their task is to use their acquired knowledge to identify five things caught in the tubes and to present the results to the class. Most students do this task successfully. The teacher writes the results on the blackboard. At the end of the lesson, the students are asked to pour the contents of the test tubes into a sink at the side of the classroom.

At least two things are striking in this example. First, as the norm, indoor classroom teaching is the beginning and completion of the sequence. Here, OEE is conducted between blocks of indoor classroom teaching, which is a normal procedure. However, this example shows a typical and paradigmatic structure of how OEE in the late Holocene has often functioned in mainstream school settings in the globalized West (Roy, 2003). OEE has been considered supplementary, as a refreshing pause, or as external to learning in indoor classrooms, which has been constructed as normal.

Second, in this example, it is striking that the students are encouraged to treat the life in the river as objects and resources for the student's own learning processes. Thus, humans are centered as the only creatures who have value in themselves, and the river and its living creatures are reduced to being treated as mere resources. If, for instance, the expedition had instead taken place in a (human) residential area, where the residents were caught and put into test tubes, moved to a school, investigated, and then thrown out, it would have been regarded as murder and insanity.

This example shows the Earth-forgetful world understanding. However, many other variations that are friendlier to the life of rivers are possible. However, this example demonstrates what has been typical of OEE in the late Holocene in mainstream educational settings: the educational process is first understood as being only for some human beings, the outdoors is considered an environment for academic learning, and other species in the living world are viewed as manipulable objects that can be categorized and treated as resources or backgrounds for human learning processes.

Another example is the following:

Example 2
A teacher takes a class of students outdoors in a wild forest as a break from normal classroom teaching in the school. The only purpose is to enjoy the field trip. The teacher simply wants to show of nature to city children who, he assumes, do not spend much time outdoors. Out there, the teacher declares, "See how beautiful the forest is! Can't you see how wonderful nature is!"

This example was selected because it is germane to the typical structural features of another variation of the understanding of OEE as a supplement. In contrast to the first example, in this example, nature, the outdoors, the forest, and the beautiful river that perhaps flows in the wood are seemingly not treated as mere resources. The excursion is not linked to any specific learning purpose. Nevertheless, it is still considered a pause from a normal day in the classroom. Furthermore, the aesthetical qualities perceived by human eyes are foregrounded by the teacher. Hence, the natural environment is presented as "out there" and thus conceived as a scene in opposition to human culture. In this example, nature is not seen as something that inevitably always already is part of and lived within, co-existing with other living beings that we might interact and co-create with in the unfolding of one great life.

Both examples could be considered based on OEE that takes place in relation to formal schooling, while much OEE takes place outside such educational settings, such as in adventure trips, tourism, adult learning, natural parks, scout excursions, summer camps for children and young adults, and so forth. However, this only strengthens my point that OEE, as it was developed in the late Holocene, was constructed as supplementary to mainstream education and schooling.

6.4 The Outdoors as a Spaceship

Both Anthropocene perspectives outlined in this chapter are critical to the mainstream understanding of OEE as supplementary. Both set the stage for the simultaneous reconstruction of mainstream education and OEE. Both reject the idea of nature and the outdoors as something that must be entered from indoors and returned

from to safety indoors. But they reconstruct and reject in different ways, and they have contrasting implications.

From both perspectives, the concept of human dwelling in the world is structured by processes of going in, going out, seeking, hiding, leaving home, being out there, returning home, and so forth. However, they propose interpretations of these processes that differ from the sharp distinction between culture and wilderness prevalent in the late Holocene. Moreover, they both attempt to contextualize education and OEE in the Anthropocene.

The first critical point, and the Anthropocene perspective derived from this point of view, argues that OEE should not conceive of the outdoors as pure nature or wilderness because it no longer exists on Earth. Instead, from this perspective, transitions between indoors and outdoors should be understood as relative movements from something *more* human-manipulated to something *less* human-manipulated, that is, as movements from one kind of human-constructed space to another.

This perspective invites the engagement of students in highly human-manipulated chronotopes, such as greenhouse gardening, and less human-manipulated surroundings, such as "re-wilded" forests. Furthermore, it suggests inviting outdoor elements indoors, such as growing plants on windowsills.

Thus, the main point in this perspective is that there is no absolute difference between indoors and outdoors, only relative movements from one space to another. All environments are more or less indoors and outdoors and are part of the same big spaceship Earth that is manipulated technically by all humans. The big indoors, one could say, is one artificial world with many rooms. From this perspective, all discussions about "pure nature," "the wild," and "absolute outdoors" are based on naïve and false fantasies.

Example 3

A teacher and her students alternate between two educational spaces: (1) a space that highly resembles a traditional classroom; (2) one that highly resembles a forest. However, in both spaces, the class learns how to manipulate them in ways that serve to continuously improve them based on sustainability or world-perfection criteria. They also experiment with learning how to recontextualize things from one space to another. For instance, they move plants from the forest and try to make them thrive in the classroom, which improves the classroom environment for both the students and the teacher. They also learn that both environments are part of spaceship Earth and that they are manipulated and affected in many ways by human activities. Hence, the students learn to understand the complex manipulations that are linked to processes all over the globe. They also learn to experiment in innovatively improving the manipulation of their learning spaces.

The important point in this example is that the students are educated to realize that all spaces they will ever enter here on Earth are part of spaceship Earth, and they are affected by complex globalized human-initiated processes and activities. They also learn that they themselves play roles, and they should learn to understand and optimize the human manipulation of the world. They learn to expect manipulation (or, at least, this is the goal). There are no fantasies of pure nature or excursions to the great outdoors. OEE is not conceived as supplementary to indoor classroom teaching but as the new normal of education, which should perhaps better be called *on board environmental education* because it observes all spaces on Earth that are possible to enter by humans as situated on spaceship Earth.

6.5 The Outdoors as a Life-Critical Zone

From another Anthropocene perspective, the second critical point and its critique of the Earth-forgetful world understanding, there has never been a pure division between culture and nature—only processes of purification (Latour, 2017). From this perspective, all cultures are variations of nature and thus part of life and its different manifestations; therefore, we ourselves are living beings (Coccia, 2019).

From this perspective, the critical life zone is an event that continuously transforms itself, all life forms, and the Earth into a new living zone. For instance, the life-critical zone is affected not only by human activities but also by plants that create and sustain the atmosphere (Coccia, 2019). Furthermore, so-called "human activities" are never purely human but are always contingent on the rest of the life-critical zone and its transformation of the Earth into a blue-green planet. Thus, our motives, desires, drives, powers, technologies, bodies, movements, understandings, impressions, expressions, and interventions are always pervaded by the creative history or evolution of life and the Earth-transformative processes of which they are a part (Bergson, 1998; Paulsen, 2021c).

This perspective questions the concept of OEE as a supplement to the indoor classroom, in which nature and outdoors are considered backdrops and resources for human well-being, healing places, or educational spaces. However, it also questions the idea of the Earth as resembling a spaceship that is controlled and manipulated by humans. In this understanding, OEE takes place in different sections of the human-manipulated spaceship.

However, the point is not simply to reject the fact that all outdoor spaces are subject to varying degrees of human manipulation. Instead, the point is a critical stance toward and modification of the understanding and conceptualization of the world that underlie this perspective as well as what it makes invisible and unattainable. Thus, from the second perspective (the more radical eco- and zone-friendly one), it is important to emphasize that the Earth is not only a spaceship that we inhabit, but that all outdoors and indoors are variations of living in the life-critical zone, and thus of coexistence with living beings that exist both inside and outside human bodies.

From this perspective follows an invitation to conceive of OEE in terms of what it ought to be as something that pays deep attention to coexistence, interdependence, and connectedness, including the possibility of cultivating interspecies dialogues with living creatures as valuable in themselves. This invitation points to an OEE that takes place "more radically" beyond the in/out distinction through situating itself between indoors and outdoors. Thus, OEE is not only supplementary to mainstream indoor classroom teaching or a relative movement between more or less human-manipulated spaces on spaceship Earth. Instead, it understands OEE as a kind of education that opens doors to experiences in developing cautious and life-welcoming connectedness between humans and more-than-humans. It envisions a kind of OEE that has "doors" but no absolute outside or inside and no indoors or outdoors, at least not at the moment when OEE in this sense happens. It takes place in the passage, the doorway, and the event where humans and more-than-humans contact, co-develop, co-operate, meet, and learn with and from each other, co-creating life and the life-critical zone into new and perhaps better conditions. At the same time, this is the place where life divides, where there is a separation between humans and more-than-humans; as a precondition for the otherness of the other, to present itself as itself in this space. Thus, this kind of OEE strives to make room for being in contact with what flows, or might flow, from the *undeconstructable* beneath always more or less indoor–outdoor manifestations: *being there*, neither inside nor outside, just there*, being*!

Example 4
A teacher and her students begin to pay heed to some exciting plants; they enjoy being together with the plants, they see them grow and flourish, and they wonder at and talk about how they can learn from the plants to sustain such a life force. They also wonder what it might be like to be a plant. They try to gently interact with the plants, learn more about what they like, what makes them thrive, and with what other plants they might enjoy growing. They also observe the interactions and symbiotic lives between the plants and insects and wonder about how they can co-create with both the insects and the plants. By observing and caring about them, they begin to develop an awareness of the greater ecology and how different living beings depend on each other. Plants, insects, other plants, other animals, humans, the atmosphere, water, minerals, and so forth. However, first, they develop their interest in their unique local ecology of plants, insects, and other living beings in this little spot, where the students and their teacher also live and are situated. They are just being there, learning, enjoying, and trying slowly and cautiously to live well together, and find out how life evolves, and how they themselves, as creative beings, can take part in life's creative events.

One might object that this example shows a romantic idealized image of education. However, the point of this example is that an OEE reconstructed from the life-affirming perspective of the Anthropocene is not necessarily extremely advanced or

futuristic. Instead, it points to the simple structural element of just *being there* in the living world, learning and enjoying this openness in ways in which life itself is central, and other living beings are approached as potential dialogue partners that are valued in themselves. It points to knowledge and creativity, so that we might learn *from* and *with*, and not only *about*. Thus, in this format, the doors that OEE seeks to leave open make available contact with and learning from other living beings as co-existing life partners in a shared environment. This does not rule out that some living beings are also treated as resources. In the example, the students might learn about the symbiotic life of the plants and the insects, and perhaps they might also develop their own new solutions. Perhaps they might also be fascinated with and inspired by the ability of the plants to transform the energy of the sun. Nevertheless, the crucial point is that teachers and students in this version of OEE *decenter* themselves and let the other living beings thereby *come out of hiding* with their knowledge, creativity, passions, interests, and so forth, and then perhaps or perhaps not, show some of what they are and how they live, and perhaps or perhaps not, then enable contact with humans, give them a lesson or two, inspire them to wonder about, take care of, or be more attentive to life, also their own life and their own 'aliveness', but most importantly *just be there when it happens*.

6.6 Two Levels of Deconstruction

Despite the tension between the view of the Earth as a spaceship and the view of the Earth as a life-critical zone of coexistence, there is common ground between the two Anthropocene perspectives. Both are critical to the illusion of a kind of OEE that conceives of nature, the outdoors, and the wild in absolute terms. Both point toward a wider deconstruction of culture and nature, indoors, and outdoors that is occurring today. Yet, they deconstruct the culture/nature distinction quite differently, and the reconstructions of OEE that follow are therefore also different. In my view, the spaceship Earth deconstruction is superficial, whereas the co-existence in the life zone deconstruction "hits" the vein of the undeconstructable "being there." However, both are to some extent important. In the following, I elaborate the ways in which *transhumanism* articulates the spaceship Earth interpretation of OEE, whereas *post-humanism* articulates the life-centered understanding of OEE.

6.6.1 Transhuman OEE

To conceive of the Earth as a human spaceship, where all spaces in the life-critical zone are human-manipulated, implodes the culture/nature distinction into a thesis that everything we are concerned about is more or less human-made or human-manipulated, including ourselves.

Perhaps the most extreme version of this view is *transhumanism* (Fuller, 2017). Here, the mission of humans' is to transform and perfect the Earth and themselves; the current Anthropocene problems of global warming and life-threatening environmental challenges are only minor technical obstacles to this mission, which can be overcome if we use our intelligence and develop our technologies (and thus transform ourselves and the Earth) to the outmost. In less radical terms, OEE should not give students false illusions about an untouched wild nature; instead, it should help students master the world, including plants and animals, in good and productive ways, thus overcoming the unsustainable ways of the late industrial era. To achieve this aim, OEE should include knowledge about new technologies that make such progress possible, such as helping students learn to produce artificial meat and genetically modified crops and creating and sustaining areas of great biodiversity that is not understood as wild nature but as highly human-created and technologically manipulated and facilitated products. Similarly, the mission should include creating and using specific human-manipulated areas that are suited to facilitating the development of the human body and brain. Thus, from the transhuman point of view, the problem with the indoor classroom is not that it is not a natural environment or not wild enough, but that it is an insufficiently technologically mediated space for human learning. OEE is, therefore, relevant in so far as it can contribute to better human learning environments and not because it can offer something contrary to the indoor classroom, but because it might be able to develop more learning-friendly spaces. Thus, from this perspective, one could argue that OEE should pay attention to how, through technology and manipulation, it can develop and perfect hybrid spaces for human learning that are better than limited industrial-framed classrooms, which are too simple for learning.

6.6.2 Posthuman OEE

From the point of view that criticizes Earth forgetfulness, OEE is different. From this perspective, the deconstruction and reconstruction of indoor and outdoor education runs in the opposite direction. From this perspective, the distinction between culture and nature implodes into a story where the life-critical zone is first understood as comprising life and living beings; thus, culture is conceptualized as a mode of nature. From this perspective, we should strive to decenter the human and allow it to eventually resolve into something much more inclusive, paying heed to more than only human life to encompass all living beings.

Perhaps the most promising version of this view is *posthumanism* (Braidotti, 2013; Haraway, 2016; Fuller, 2017). The main point here is that, if we think thoroughly about human nature, we derive the insight that humans are, and always have been, part of something bigger than themselves, the life-critical zone, and thus the evolution of life. Thus, humans are living creatures that essentially co-exist with other living beings (Coccia, 2019). Furthermore, the point is that the human ways of

being in the world that became predominant in the late Holocene were based on the idea of the Earth as a spaceship, which restricted and narrowed the perception of life on Earth. This points in the direction of not trying to transform the Earth into a spaceship that humans seek to control because it restricts, damages, and decreases life possibilities for both humans and more-than-humans (Paulsen et al., 2022). It makes us inhuman and alienated from life, and it would probably exacerbate the damage already done to the life zone.

A less radical articulation is as follows: From this perspective, it is advisable to *withdraw* from the ruthless ways of being in the world developed in the late Holocene, including late Holocene logics. Instead, we must give more space to other living beings and ourselves as living beings, which was neglected and suppressed in late Holocene capitalistic and industrial societies. Part of this withdrawal is to let other living beings speak and act, situating ourselves as listeners rather than as actors who want to manipulate everything (Paulsen, 2022). Thus, the posthuman perspective conceives of OEE as working to develop spaces, activities, and events where this 'welcoming' interconnectedness becomes possible.

This perspective points in the direction of OEE in which students learn to develop their ecological awareness as Earth listeners and caretakers who approach other living beings as dialogue partners, letting them be radical others who take the initiative and become co-deciders (Nørreklit & Paulsen, 2022). From this point of view, there is no pure nature, no pure outdoors, and no pure human! The ideology that postulates that the Earth is simply a human-made and human-controlled spaceship overlooks that humans are living beings that existentially depend on many other co-living beings. Moreover, all the living beings that have existed before the current living human beings are linked through births and relationships with their mothers, and so on down to the very first manifestation of life. Even more importantly, the transhuman perspective dangerously legitimizes the treatment of other living beings as mere resources, backgrounds, and scenes for human machination; thus, it reduces everything to objects that humans are encouraged to manipulate (e.g., gene manipulation, etc.) as 'dead entities', without intrinsic values.

6.7 Trust in a Spaceship or Trust in a Wider Life

One could also articulate the difference between the transhuman and posthuman perspectives by saying that the first wants to *advance* the human spaceship and thus the human-constructed hybridization of humans and non-humans, whereas the latter wants to dissolve the very idea of the Earth as a spaceship, instead making humans open to much broader possibilities of life and ways of being in the world by letting living beings in their multitude *take over*.

The result is two different reconstructions of OEE. On one hand, OEE is reconstructed as educational spaceship *management*. OEE is then understood as taking place on a human-manipulated ship, and the function of learning is to develop and

optimize the use of spaceship Earth only for the sake of human beings and their needs. On the other hand, OEE is reconstructed as a *withdrawal* to let life and living beings become (more) alive and present in all their might. OEE is then understood as taking place in this empty space, this doorway, this clearing, and the non-defined where humans and more-than-humans can meet, enter interspecies dialogues, and co-create a new Earth as co-species (Paulsen, 2021c).

6.8 Conclusion

Three vectors for the future of OEE emerge from the perspectives of the Anthropocene outlined in this chapter:

1. OEE is understood as taking place *outside* in wild nature *as a supplement* to indoor classroom teaching, where students sit and learn. This is arguably the *mainstream* view of OEE.
2. OEE is understood as taking place *on* manipulated sections of spaceship Earth, where one learns how to manage the human spaceship and specific kinds of spaces in sustainable and optimized ways. This is the transhuman view of OEE.
3. OEE is understood as taking place *in* the life-critical zone of the Earth, with an openness to let all living beings present themselves to humans and vice versa, thereby learning how to learn from and with our co-species. This is the posthuman view of OEE.

In reality, these views can be combined in confusing and perhaps constructive ways. The purpose of this chapter was not to analyze real cases of OEE. Other chapters in this book succeed in achieving this task, which has also been tackled elsewhere in the literature (e.g., Sobel, 2020; Gilbertson et al., 2022).

At the end of this chapter, I want to add that the three views have different premises. The first view seems desirable, but according to the two other views, it is based on the false premise and ontology that pure nature exists and that OEE essentially concerns learning outdoors in wild nature, which is radically different from being indoors in artificial, human-made spaces. The second view reconstructs OEE based on the deconstruction of distinctions between culture/nature and indoors/outdoors, by assuming that it is much more realistic, truthful, and better – in the Anthropocene! – to understand that OEE is situated on the human-manipulated spaceship Earth. However, according to the third view, this does not tell the entire story of the Anthropocene. According to the third view, the very *idea* of Earth as a spaceship is limiting ontologically, epistemologically, axiologically, and pedagogically. Instead of viewing the whole Earth as a human-manipulated spaceship, and instead of treating all species and entities on the planet as mere resources, backgrounds, or scenes for the benefit of dominating humans and the limited range of human aspects that neglect and suppress living beings, reducing all other living beings to manipulable objects, the third view reconstructs OEE based on a radical deconstruction of the binaries of nature/culture and indoors/outdoors, arguing that these have never been

and can never be dichotomized. This leads to a reconstruction of OEE that is understood as taking place neither out in pure nature nor on a human-manipulated spaceship but in the life-critical zone, where we suspend our former manipulations and let other living beings (re)appear; in events that go beyond in/out.

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Part II
Approaches to Outdoor Environmental Education

Chapter 7
Environmental Interpretation

Michal Medek

7.1 Roots of Interpretation

> *While a guide on Long's Peak I developed what may be called the poetic interpretation of the facts of nature. Scientific names in a dead language together with classifications that dulled interest were ever received, as they should have been, with indifference and lack of enthusiasm by those who did not know. Hence, I began to state information about most things in the form of its manners and customs, its neighbours and its biography.*

wrote Enos Mills (1920) while describing his work with children in what he called a 'Trail School' at the turn of the nineteenth and twentieth century. The practice of the Trail School, education driven by children's interest in the outdoors, reminds us of many subsequent outdoor education methods such as Joseph Cornell's flow education (Cornell, 1998) as well as Mill's contemporaries' educational practice within the Nature Study movement. Marta Brunelli (2013: 402) finds the roots of environmental interpretation in the context of the 'cult of naturalism' of the nineteenth century that created the demand for education as a part of environmental tourism, as well as in the progressive education movement of the second half of the nineteenth century with its hands-on approach, namely the Nature Study. Nature Study refrains from classifications and comprehension through theoretical constructions, but puts the direct experience of the learner first, as its keen proponent, Liberty H. Bailey, explains:

> *The first essential in nature study is actually to see the thing or the phenomenon. It is positive, direct, discriminating, accurate observation. The second essential is to understand*

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_7

> *why the thing is so, or what it means. The third essential is the desire to know more, and this comes of itself and thereby is unlike much other effort of the schoolroom. The final result should be the development of a keen personal interest in every natural object and phenomenon.* (Brunelli, 2013: 413)

Educational efforts within the US National Park Service in the 1920s and 1930s show the pursuit of distinctive educational methods and forms for national parks that are often referred to as 'field laboratories' or 'out of doors classrooms'. This illustrates that the main scope of the programs was field science delivered to both schools and 'lay visitors'. Although the NPS's chief educational officers understood that the educational principles of Nature Study must be employed in the programs, they searched for more robust methodological background:

> *There is hope that new methods in adult education will be discovered, and that the national parks will become the great universities of the out-of-doors for which their superlative scientific exhibits so finely equip them.* (Bryant & Atwood, 1932: 8)

The word "interpretation" started to be widely used for educational activities by the National Park Service in the late 1930s (Beck & Cable, 2002: 5). Freeman Tilden is praised for laying the longed-for methodological foundations for interpretation (Ludwig, 2003: 8). Before examining more closely Tilden's contribution, we must note that guided tours of nature were the major educational method practiced both at the times of Tilden and Mills (Fig. 7.1).

Fig. 7.1 Excursion with a ranger. (Photo: Jakub Pejcal)

7.2 Tilden's Principles

In 1955, a journalist Freeman Tilden was commissioned by the US National Park Service to

> *get beneath the surface of method and procedure to the underlying principles – to the art and philosophy that should guide efforts to interpret the great scenic and historical heritage of America to her citizens.* (Craig in Tilden, 2007: 9)

After extensive travel and his own educational experiments, Tilden in 1957 published six principles, as (in his own words), a philosophy upon which interpretation as an educational activity can be based. The principles are as follows:

1. Any interpretation that does not somehow relate what is being displayed or described to something within the personality or experience of the visitor will be sterile.
2. Information, as such, is not interpretation. Interpretation is revelation based upon information. But they are entirely different things. However, all interpretation includes information.
3. Interpretation is an art, which combines many arts, whether the materials presented are scientific, historical or architectural. Any art is in some degree teachable.
4. The chief aim of Interpretation is not instruction, but provocation.
5. Interpretation should aim to present a whole rather than a part, and must address itself to the whole man rather than any phase.
6. Interpretation addressed to children (say up to the age of twelve) should not be a dilution of the presentation to adults, but should follow a fundamentally different approach. To be at its best it will require a separate program.

Unlike his predecessors, Tilden freed himself from the idea of studying natural assets in the unique outdoor environment of national parks. He saw interpretation as

> *an educational activity that aims to reveal* ***meanings and relationships*** *through the use of original objects, by first-hand experience, and by illustrative media.* (Tilden, 2007: 33)

He based the method on the constructivist approach and clearly saw that mental processes need to be initiated within a participant. Thus, the aim of the educational encounter for Tilden is stimulation to widen horizons and interest, not transfer of facts.

Though not being a naturalist, historian, educator, or psychologist, Tilden used observation and experiments to distill key principles of learning in an informal setting (or communication in general): The program must be perceived as relevant and should support the personal meaning-making process within each participant. Participants should be actively involved, ideally both mentally and physically. Starting from the real phenomena a person can experience first-hand, the program should point to a larger picture or '*deeper truths that lie behind any statements of fact*', i.e., a generalized idea, which a participant can not only take back home, but which is internalized and keeps him/her connected with the phenomena long after the program experience (Tilden, 2007: 59).

By mentioning the age of 12, Tilden noted that this method is relevant for adults and children with fully developed abstract thinking, what his contemporary Jean Piaget (1972) called the formal operational stage of cognitive development.

7.3 Environmental Interpretation

Based on the principles formulated by Tilden, interpreters were trained not only in the National Park Service, but also in zoos, memory institutions, and other natural and cultural heritage sites. The field spread to other countries, particularly in the English-speaking world (Merriman & Brochu, 2006).

Strong emphasis on environmental education aspect of interpretive programs can be seen in the 1970s. Freeman Tilden advocated for using the unique channel of the National Park Service toward adults for environmental education of this target group (Craig in Tilden, 2007: 11), Grant William Sharpe (1976) published Interpreting the Environment, and Don Aldridge, a key figure of heritage interpretation in the UK, defined the interpretation as:

> *the art of explaining the significance of a place to the public who visit it in order to point out a conservation message.* (Aldridge, 1975)

In 1980 William Lewis enriched the methodological toolbox of thematic interpretation (Lewis, 2014) that was further elaborated by psychologist Sam Ham in the influential monography Environmental Interpretation (1992).

7.4 Thematic Approach

The thematic approach is based on theory of communication which shows that if we clearly state a theme of a program (i.e. a single whole idea we want to communicate) and build the program around it, the audience will comprehend much better (Ham, 1992). Although both Ham and Lewis suggest the thematic approach for oral and written presentations, the concept began to be used in all forms of interpretive programs. Today it is even applied in the field of interpretive planning (Brochu, 2014: 106), which is a methodology for developing interpretive programs and communication strategies at levels ranging from a single program or an exhibition up to a whole national park.

Sam Ham (2013: 14) defines four qualities that interpretive programs should have in order to be successful, i.e., to maintain attention as long as the recipient understands the message, which is presented in a convincing way.

1. Interpretation has a theme. (T)
2. Interpretation is organized. (O)

3. Interpretation is relevant. (R)
4. Interpretation is enjoyable. (E)

Ham calls this the TORE model and further elaborates on each part of it.

In order to excite a participant, the **theme** should be strong. This means provoking the audience to think, attract attention, creating intrigue, making participants curious (Ham, 2013: 122). The process of theme development became fundamental for the construction of interpretive programs (see Ludwig, 2015; Kohl, 2018).

'Interpretation is **organized** when it's presented in the way that is easy to follow' (Ham, 2013: 26). The key to remembering new information is the individual's ability to create a meaningful unit from it that can relate to information stored in long-term memory (Revlin, 2012: 123). This is translated into interpretive programs by structuring them hierarchically along themes and underpinning subthemes. The number of subthemes is limited to a maximum of four based on the findings of memory experiments by Cowan (2001). This allows a participant to be oriented in the structure of the program, which leads to an improved learning process in the given informal environment.

Relevant interpretation is meaningful, that is, comprehensible or resonant with the knowledge of a program participant. It should also be personal using the above-mentioned Tilden principles. Due to the diversity of program participants and their diverse levels of knowledge, the interpretation often uses so-called universal concepts, topics shared by all people, such as love, fear, death, courage, friendship, etc. (Brochu & Merriman, 2015).

Interpret Europe (2017: 14) points out that universal concepts, which lead to individual meaning-making process, are closely related to mental frames that trigger individual system of values. Thus, proper framing of messages (usually delivered through stories) of an interpretive program not only makes the first-hand experience relevant to a participant, but it can also promote values associated with environmental-friendly behavior, Universalism in particular.

> *Universalism values derive from survival needs of individuals and groups. But people do not recognize these needs until they encounter others beyond the extended primary group and until they become aware of the scarcity of natural resources. People may then realize that failure to accept others who are different and treat them justly will lead to life-threatening strife. They may also realize that failure to protect the natural environment will lead to the destruction of the resources on which life depends.* (Schwartz, 2012: 7)

An **enjoyable** experience does not mean that the program must be entertaining, but that it provides an experience that is considered reasonable and/or in line with expectations. This can also mean arousing emotions such as sadness or humility.

7.5 Program Development

Interpretive planning is the process of program development. Since it often deals with multiple programs and communication strategies (e.g., at a national park level), some of the planning models are robust and comprehensive. Despite of the fact, the

models (Carter, 2001; Van Matre, 2009; Brochu, 2014; Stergioti et al., 2021) share many similarities that can be generalized as follows.

1. The planning process starts with the review phase:
    1.1 Looking at **the place** (or heritage in general), its characteristics, processes that shaped it and phenomena that can be experienced by program participants, what activities are endangering the heritage, what conservation measures are in place.
    1.2 Analyzing who the (potential) **participants** are, what their interests are likely to be, and how they may perceive the site (or heritage in general).
    1.3 Reviewing the content and quality of **current interpretive programs** (often including infrastructure that influences the experience of people with the phenomena).
2. In the development phase, the process looks at:
    2.1 **Aims** of the program: What change should it deliver within given target group(s).
    2.2 Program **content** – theme development, first-hand experiences facilitation, provoking meaning-making and participation, etc.
    2.3 Program **form** – which media and aids best suit to deliver the content in order to achieve program aims.
    2.4 How will the program be **implemented and sustained** and how we find out it works, i.e. achieves its aims.

Specific to program development in the field of environmental interpretation is the that the form is decided in the later stages of the work only after the target group has been understood, and a clear direction about the content and aims of the program have been decided (Brochu, 2014: 69). Unlike other methods, environmental interpretation (a) intends to connect a person with the very place through first-hand experience, (b) may aspire to reach lots of people simultaneously, often across a large space, and (c) interpretive projects may be endowed with generous funding. Thus, it may appear during the planning process that a self-guided program using a leaflet or an app in a handheld device serves the purpose of the program better than a guided walk or a panel (Fig. 7.3) and that is why the decision on so called 'interpretive media' comes later in the development phase. Figure 7.2 shows an outline of an interpretive program developed in accordance with the principles of thematic interpretation.

7.6 Criticism

The mainstream thematic approach in interpretive programs also has its critics. Van Matre (2009) points out that individual experience with a place or phenomenon should be the focal point of interpretive programs, not the personal deeper truths or elaborated theme structure. He is also critical of the jargon used within the field, for

Fig. 7.2 Ricka Valley excursion thematic outline

Fig. 7.3 Interpretive panels – example of a non-personal interpretive program. (Photo: Michal Medek)

example, referring to natural assets as 'resources' (Van Matre, 2009: 34). This linguistic view is also shared by Interpret Europe (Stergioti et al., 2021), which puts emphasis on individual meaning-making, participation, and promoting those values leading to humanity and sustainability in the planning process. Heritage is in Interpret Europe perceived as a shared treasure with the locals being largely its authentic stewards, unlike program development experts parachuted to the site or conservation institutions governed from far away.

A skeptical view on the institution-driven planning process is also shared by Jan Kohl and Stephen McCool (2016), who argue for a more holistic approach in the world that is not predictable, linear, understandable, or stable.

In general, all the above-mentioned authors call for a less mechanical approach to program development in environmental interpretation, i.e., putting the individual experience of the site on a pedestal, avoiding repeating similar patterns across different sites and developing programs presenting not only the viewpoint of a contract owner.

7.7 Discourse

There are many topics resonating through the field of environmental interpretation. We pick up some of the current discourse:

We have already mentioned **participation** both in the phase of program development and program execution. The European professional organization Interpret Europe puts particular emphasis on this aspect. One of the four key qualities of interpretation in its triangle model (Ludwig, 2015) is 'Provoking resonance and participation' which is translated to the interpretive planning process as involving a wide range of stakeholders. They 'include all organisations or individuals, residents or visitors that have an interest in the site, affect the site, or are affected by the site.' (Stergioti et al., 2021) This broad definition reaches beyond the term heritage community (Council of Europe, 2005) and enables, namely, the local inhabitants to both have a say in how the programs are assembled as well as play a role in them.

Long before **authenticity** became a merchandising tool (Gilmore & Pine, 2007) Freeman Tilden noted that the contact with the original (be it wilderness or a pueblo of native Americans) is the very essence of the interpretive encounter. He also emphasized the authenticity of the interpreter as a priceless ingredient in any program (Tilden, 2007: 130). Since interpretation programs mostly happen in free time within the framework of a tourist experience, they cannot escape the debate initiated by MacCannell (1973) in the field of tourism and continued by Jean Beaudrillard (1981) regarding the authenticity of human experiences. Since authenticity is not an objective quality but a projection of an individual's ideas, it needs to be constantly negotiated and leads the debate to several dimensions. Let us name just a few: (1) Negotiation of authenticity within interpretive program, e.g., shall participants learn that what we protect today as a primaeval forest was a deforested area several centuries ago? How much shall the program meet participants' expectations of authenticity that are mental cultural constructs often not based on the realities of the place? (2) The impact of human actions on heritage including the observer effect – the change that occurs from the mere fact of observing the thing. Typical examples are programs in wilderness areas impacting the very essence of the wilderness as well

as the perception of other visitors. (3) Meddling with natural or cultural heritage in order to conserve its state with inevitable impact on perception of authenticity. For example, slowing erosion forces that sculpted rock monuments but inevitably lead to their destruction.

Because the concept of authenticity is at the heart of the method of environmental interpretation while also being 'an elusive concept that lacks a set of central identifying criteria, lacks a standard definition, varies in meaning from place to place, and has varying levels of acceptance by groups within society' (Prideaux et al., 2013: 6) the debate is far from over.

The ambiguous contribution of **new technologies** has been among hotly debated topics. On one hand, the technologies open new horizons in possibilities for environmental interpretation, on the other hand there is the danger the experience here and now is substituted with interactions with a device (Beck & Cable, 2011: 81). Činčera et al. (2018) suggest that the debate is actually of ontological nature. Romanticists feel the human experience in nature should follow the principles of (natural) simplicity and point out that gadgets do not enhance the experiences of contacts with elements for good (idea coined already in the 1940s by Aldo Leopold, 1949: 166). Relativists do not label technologies as good or evil and suggest to study benefits or negative effects of each individual use of them. The important thing is not to forget the mission of an interpretive program and avoid swimming with a tide of inflated expectations that the adoption of new technologies brings about (Gartner's Hype Cycle).

Dealing with tablets in an interpretive program at Pacific Grove Monarch Butterfly Sanctuary can be considered an example of a good practice. In order to widen the experience of seeing the butterflies, the Pacific Grove Museum of Natural History connected tablets to spotting scopes enabling more participants to see the butterflies on larger screens. However, it appeared that for three to fifth graders the screens detached children from the on-site experience as they thought they were merely looking at pre-recorded digital content. Older students could better understand the connection of the on-screen content with the site. For younger participants the benefit of avoiding troubles of manipulation with the spotting scopes enhanced their experience, notwithstanding, they were less skeptical about what they see on screen (Stong, 2019). It seems that the lecturers in this case took to heart the advice on distinguishing meaningful employment of new technologies to interpretive programs:

> *If one draws attention away from the resource (sic) to a screen, when visitors return their gaze to their immediate surroundings, they should be able to discern more, appreciate more, question more, enjoy more.* (Hristov et al., 2019)

7.8 Conclusion

From its empirical beginning under the auspices of the US National Park Service, environmental interpretation developed into a distinctive field with numerous professional training courses, university studies, and a research journal.

Environmental interpretation is anchored in informal education focusing on experiential learning during free time activities like visits to national parks or hiking. Interpretive programs are delivered in various forms, ranging from guided tours to interpretive panels or exhibitions at visitor centers, attempting to reach the widest possible audience. This might be why the largest professional organization refers to it as 'purposeful approach to communication' (National Association for Interpretation, 2021) shifting from the classical framework of 'educational activity'.

The common ground between the programs is that they are place (heritage) centered, which puts emphasis on experiential learning through individual first-hand experience, thus attempting to trigger meaning-making process with the ultimate goal of protection and fostering stewardship.

Program development is based on the interpretive planning process that ideally follows one of the planning methods. Most of them use the thematic approach of program design.

The methodological approach used in environmental interpretation employs learning and communication theories in order to reach the widest audience mostly in non-educational settings. It's sophisticated work with emotional aspects of programs in order to turn natural (and cultural) phenomena into experiences and make them relevant to all people so that it seems to be a valuable and inspiring contribution to the field of outdoor environmental education.

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Chapter 8
Earth Education: Magical Learning Adventures for Living More Lightly

Bruce Johnson

8.1 Introduction

Earth education is the process of helping people live more harmoniously and joyously with the natural world (Van Matre, 1990, p. 87). Originally framed as an innovative way of doing nature education and then environmental education in its early days in the 1960s and 1970s, the term "earth education" was created in 1984 to distinguish this work from mainstream environmental education (Van Matre, 1990). To understand what earth education is today and where it is going in the future, it is important to understand where it has come from.

Acclimatization was the foundation for earth education. Created in response to Van Matre's frustrations with traditional nature education in his work in summer camps, Van Matre coined the term:

> Let's help our campers acclimate themselves to their own environment. To understand it on their own terms, and its own merits… We call it *acclimatization*. (Van Matre, 1972, p. 10)

The goal of acclimatization was "a breaking down of barriers to the point where one human being can feel himself not only completely surrounded by his environment but totally involved with it as well." (Van Matre, 1972, p. 7). Van Matre and colleagues created innovative ways of helping people build a love affair with the earth through immersive experiences in nature, highly participatory activities that helped young people expand their awareness while also better understanding the ecological processes that sustain all life, including humans.

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_8

The key components of Acclimatization were concepts, senses, solitude, and mechanics (Van Matre, 1979). Ecological concepts were the focus of the knowledge portion. To understand environmental issues, we need to understand how the ecological systems that support all life function. Feelings are important because we protect what we care about. Opportunities for solitude in nature are important for personal connections to the flow of life. The mechanics turned out to be vital for breaking down the barriers people have erected to immersing themselves in nature; simply visiting a natural area is most often not sufficient. Innovative experiences are necessary. However, Acclimatization was much more than these components because of the magic that permeated the experiences.

> In Acclimatization, the medium is the magic. This is not to imply the magic of charlatanism, but the magic of ecstasy. Much of it comes simply from doing the usual in an unusual way. It's not showing, but sharing; not forming, but feeling. It's non-verbal, gut-reaction. Often spontaneous in origin, it can be stimulated by the correct mixture of the necessary ingredients. In the end, it is overpowering. (Van Matre, 1972, p. 25)

Moving beyond summer camp programs, the first acclimatization program designed for school groups was Sunship Earth (Van Matre, 1979). Based on a week-long school camp model, Sunship Earth brought the concepts, feelings, solitude, and mechanics, along with the catalyst of magic, to a new kind of education program for 11–12-year-old children. Using the analogy of Earth as a spaceship powered by the energy of the sun, the participants focus on learning the operating principles of the sunship to be come better passengers and crewmembers. In Concept Paths, seven fundamental ecological concepts are taught in 15 different outdoor, participatory experiences that aim to bring these abstract concepts into the concrete: energy flow, cycling, diversity, community, interrelationships, change, and adaptation. Additional experiences help to develop feelings of connection with nature, including Discovery Parties, Solitude Enhancing Experiences, and Immersing Experiences. At the end of the five days, participants make pledges to adopt new environmental behaviors to lessen their impact on the sunship when they return to school and home.

Sunship Earth was the beginning of a series of programs that have been developed beginning in the 1980s, at the same time that Acclimatization became Earth Education. All earth education programs are based on three primary components: understandings, feelings, and processing. The four ecological concepts in earth education programs are: flow of energy, cycling of materials, interrelating of life, and changing of forms. The four feelings are: joy at being in touch with the elements of life, kinship with all living things, reverence for natural communities, and love for the earth. Processing also consists of four elements: internalizing understandings for how life works on the earth, enhancing feelings for the earth and its life, crafting more harmonious lifestyles, and participating in environmental planning and action.

The Institute for Earth Education (IEE) was established in 1974 with the original name of Acclimatization Experiences Institute. An international, non-profit organization, IEE consists of a networks of volunteer Associates around the world. A physical home in a secluded grove in West Virginia serves as the office, and there are affiliates and branches of IEE in several countries. With no governmental,

foundation or grant support, IEE depends on sales of its books and materials, fees from workshops and speeches, and individual donations to maintain a very low budget operation.[1]

Today IEE is "an international band of professionals dedicated to transforming our relationship with the earth" focusing on Interpretation (the craft of enriching the experience of leisure visitors with places established for the public good) and Contemplation (opportunities to pause and savour the flow of life on this planet and ponder our relationship with it) as well as Education.

8.2 Programmatic Approach

A distinguishing characteristic of earth education is the emphasis on taking a programmatic approach, specifically designed in the late 1970s and early 1980s to contrast with the prevalent infusion approach in environmental education (Wohlers & Johnson, 2003). The infusion approach promoted the creation of activities that were meant to be infused into other subjects as a way to get environmental messages spread widely. Concerned about the lack of coherence to such an approach, the absence of any sort of overall framework or even identification of specific goals, and the clear message about the relative lack of importance of education for the environment conveyed by such an approach, Van Matre and Associates[2] focused on creating holistic programs. In this view, a program is a focused, sequential, cumulative set of learning experiences designed with specific outcomes in mind.

In the late 1970s, IEE began the creation of a set of model programs for all ages. Each program has the same overall goals: constructing ecological understandings, developing feelings, and changing actions and behaviors. In addition, each program is designed as a magical learning adventure using key structures and frameworks. Four programs have been completed and published: Sunship Earth (Van Matre, 1979), Earthkeepers (Van Matre & Johnson, 1988), Sunship III (Van Matre & Johnson, 1997), and Rangers of the Earth (Van Matre & Farber, 2005). Others are in the development and piloting phase, while some are still just ideas.

8.2.1 Magical Learning Adventures

A vitally important element that emerged from the Acclimatization work was "magic". All earth education programs are designed to be experienced by participants as magical learning adventures. They are full of excitement, surprises, and discoveries. The aim is for a feeling of being on a special adventure, while learning

[1] www.ieetree.org

[2] Associate is the term used for the volunteer staff of The Institute for Earth Education.

along the way. Of course, such a feeling is not easy to design. In addition, magic must be used in moderation; too much magic results in that becoming the message, overwhelming the learning. For those reasons, earth education programs go through years of design and piloting.

As an illustration, the Earthkeepers program (Van Matre & Johnson, 1988) uses several elements that contribute to the sense of participation in a magical learning adventure. Participants ages 9–11 are invited by a mysterious character known only by the initials E.M. to become Earthkeepers. A letter from E.M. and an adventure map that arrives in the classroom sets the stage. Throughout the program, participants earn keys that open boxes to learn secret meanings of E.M.'s initials. Following a map to make discoveries, figuring out secrets, the mysterious nature of E.M., and earning keys that unlock boxes to reveal secrets all add to the feeling of adventure. The activities themselves, highly participatory, outdoor experiences that fit into the overall storyline of the program, also contribute.

8.2.2 Structure

While earth education programs can seem somewhat spontaneous to participants, in reality they are highly structured. Each program has specific components that focus on understandings, feelings, and processing those experiences to transfer to life at home and at school. For example, in the Earthkeepers program, participants earn a **K**nowledge key by participating in four activities, one each for the major ecological concepts of energy flow, materials cycling, interrelationships, and change. The **E**xperience key is similarly earned in four activities, focused on solitude, observation, discovery, and immersion. The final two keys, for **Y**ourself and **S**haring are earned in the program follow-through back at home and school.

This structure also serves as an organizer for the program. **K**nowledge-**E**xperience-**Y**ourself-**S**haring, as the four components of the program are also a mnemonic device – KEYS. At each stage, participants earn a key and unlock a box to reveal a secret meaning of E.M. (another mnemonic device). For example, on opening the K box, they discover that the secret meaning of E.M. for Knowledge is Energy and Materials. That serves as another organizer and reinforcer because the flow of energy and cycling of materials are the key ideas of the Knowledge activities. Of course, earning keys and using them to open locked boxes to reveal secret meanings of a mysterious character's name contribute to the "magic" of the learning adventure.

Building on the initial Acclimatization work, the activities in each portion of the program are structured according to the goals for that section. Knowledge activities focus on making abstract ecological concepts concrete through the use of props and materials as well as using analogies to experiences relevant to the participants. In the Sunship Earth program, for example, participants become workers in a "food factory". They take apart air and water molecules (table tennis balls with Velcro) and recombine them into molecules containing stored sunlight energy, the food for

all life. Experience activities focus on breaking down barriers to allow more direct experience with nature. One example activity is the Earthwalk, a series of mini activities that build awareness through awakening senses and viewing the familiar in unfamiliar ways. Magic Spots is another activity that provides participants with solitude in a natural setting to be in touch with the flow of life. All the activities take place outdoors where the ecological concepts can be seen in action and the participants can experience the natural world first-hand.

8.3 Learning Frameworks

8.3.1 Conceptual Learning

Ecological concepts, the processes that enable life, are the focus of the understandings in earth education programs. While there are many ecological concepts, four important concepts have been identified that are essential for understanding the processes of life on our planet. (1) Flow of energy: Energy flows from the sun to Earth, with some of it captured by green plants and then turned into food through the process of photosynthesis. When we eat, we get stored sunlight energy that fuels our bodies, but we use stored sunlight energy for many other things, including transportation, heating, and cooling, making products, and farming and processing food. Fossil fuels contain stored sunlight energy from plants and animals that died hundreds of millions of years ago, and our societies today are dependent on burning those fuels for most of our energy needs, causing numerous problems. (2) Cycling of materials: The matter of which all living and non-loving things are made is constantly recycled. Recycling processes such as the air and water cycles move materials from place to place and through different forms over time. We depend not just on the materials (our bodies are made of these materials) but also on the processes that move them. Too often, we add pollutants that travel in these cycles as well, becoming contaminants to systems as well as living things (including us). (3) Interrelating of life: Living and non-living things interact with each other constantly. Plants and animals both compete and cooperate with each other. Both depend on non-living things as well. Because of these complex and often hidden interrelationships, actions we take have broader effects than we intend, and these unintended consequences can disrupt the processes of life. (4) Changing of forms: Everything is constantly changing. Some change is immediate and readily apparent. Seasons change through the year, and all living things grow and eventually die. Other changes, such as shifting of landmasses, happen so slowly that we cannot see the change happening; we can only see stages of the change.

These ecological concepts are complex. The goal in earth education is to help participants construct big picture understandings of these ecological concepts rather than memorizing the details. For instance, participants learn that sunlight energy is captured and stored by green plants through photosynthesis, but they are not taught

the chemical formula for photosynthesis. In addition, the focus is on the processes of life, not the pieces. Attentions is paid to ways that living things interact with each other and with non-living things rather than to learning the names of the plants and animals. Conceptual understanding is favored over factual knowledge.

Conceptual activities in earth education programs are based on the Inform-Assimilate-Apply (I-A-A) learning model. Inform refers to participants obtaining information in a variety of ways, taking something in through observing, reading, listening to a description, and so on. This accounts for much of formal schooling, taking in information without the opportunity to do much with it, and so it is often not really learned and is easily forgotten. The next two steps of I-A-A are the important ones. To assimilate what they take in, participants need to do some thing with it, to engage with the knowledge. In earth education programs, the bulk of the concept activities are tasked with this, helping the participants work with the knowledge to better understand it and to help it fit with their prior knowledge and experience. Because these ecological concepts are abstract, i. e., one cannot see photosynthesis happening, the activities bring the concepts into the concrete so that the participants can interact with them. Finally, to truly learn something, it is important to use it, the applying stage. This happens at different levels. At the conclusion of each concept activity, participants find an example of the concept happening in immediate area, while longer-term application happens through applying the understandings back in the participants' schools and homes.

8.3.2 Developing Feelings

The early Acclimatization work made it clear that carefully designed experiences could help to break down barriers to interaction with nature and help participants develop positive feelings for the natural world. Leaders are guides who facilitate activities that help to overcome the reluctance to get too close, the desire for comfort, and the trepidation and even outright fear that too often reinforce the idea of nature as separate from us.

Solitude experiences are a frequent component of earth education programs. The busyness of our high-energy lives, even for children, means that many people have few opportunities for be quiet and alone, especially in a natural setting. Careful crafting is necessary to enable participants to have successful solitude experiences in nature, and participants are often sceptical and nervous about them. In the end, they are powerful experiences that for most participants are one of the most enjoyable and impactful parts of the programs.

Changing perspectives, enabling discovery, and immersing participants in nature are also important foci of activities that focus on developing positive feelings. Each requires different techniques, but it is the combination of thoughtfully planned experiences and leaders who act as guides that brings results in success.

8.3.3 Personal Actions and Behaviors

In much of environmental education, a major focus is to teach about environmental issues. Earth education takes a different approach, helping participants construct understandings of the systems of life so that they can better understand environmental issues. It is not that issues are not important to learn about; it is that first understanding the systems helps to better understand the issues later. It is not a matter of which is more important but a matter of the sequence of the learning.

Similarly, earth education is based on a sequence of actions and behaviors related to the environment. Starting where the learners are, the programs begin with individual actions and behaviors that participants can control. The idea is to help participants begin to make changes that can become habits that become part of their normal routine. This approach helps them to see that they can accomplish positive change regarding the environment, building a sense of agency.

Of course, individual behaviors and actions are clearly not sufficient to deal with the environmental crises we face. Group actions, policy changes, and political leadership are necessary. Those are difficult to begin with, however, especially in the case of young learners. Being successful in smaller, personal actions and behaviors can provide a solid foundation for expansion of the work over time.

8.4 Vignette: A Program in Action

A group of six early adolescents sit in a circle on the ground in a forest clearing, engaged in a discussion about the phrase “From this day forward, you must begin taking responsibility for your own actions and accepting the consequences of them.” as they prepare to return to home and school after a three-day/two-night Commencement Experience at an outdoor centre in a natural area outside of the city. They are participating in the earth education program Sunship III (Van Matre & Johnson, 1997).

Their journey began back at school with each young person receiving a card congratulating them on reaching an important Stage of Life along with an invitation to the Commencement Exercises, to prepare them for commencing the next stage of life. The class was split into small “sharing circle” groups to read and discuss their Guidebook to Sunship III, the third planet from the sun. Upon completion, each participant received a gift, a check for 1000 Solarians (units of sunlight energy) to cover the costs of the three-day experience.

On arrival at the centre, the young people registered, paying 500 Solarians for most of the energy and materials they would use over the next three days. The other 500 Solarians were deposited into a checking account, to be used as needed to purchase permits for the energy and materials they would use that were not covered by the basic fee. These were the energy and materials they have some control over, such as whether they take a short or long shower, use disposable paper serviettes or

reusable cloth ones, use electric appliances, and so on. Each evening, the participants took stock of the energy and materials they used that day and made plans for what they would need to purchase for the next day, focusing on how to use less each day.

With their permits in place, they took part in the opening ceremony, where they learned about the purpose of the experience, examining "perception and choice" as they consider their relationship with the earth. The remainder of the three days included outdoor activities focused on the key ecological systems that sustain life on the planet: energy, materials, interrelationships, and change. Throughout the experience, the sharing circle groups continued to meet to help each other make sense of what they were learning and experience.

On this final day at the centre, they are meeting to prepare to return to home and school to embark on a Quest to seek truth, adventure, and harmony as they craft lifestyles that will lessen their impact on the earth. Over the next several months, they will interview different role models who are using energy and materials wisely, demonstrating care for natural places and things, and developing a deep personal relationship with the earth. Sharing circles will continue to meet weekly to support each other in examining what they learn and figuring what they want to incorporate into their own lives.

8.5 Research

In the 1980s and 1990s, there were several small-scale research projects involving earth education programs. Most were qualitative in nature, done as master's theses and not published. However, two were published: Greenall Gough (1990) conducted case study of an Earthkeepers program. Keen (1991) conducted a mixed methods study of a Sunship Earth program.

In the last 20 years, more research has been conducted and published. Some studies have examined the implementation and effects of the Earthkeeper program (Činčera & Johnson, 2013; Manoli et al., 2014) and Sunship Earth program (Johnson & Manoli, 2008). These studies found significant increases in student understanding of ecological concepts, pre-environmental attitudes and values, and self-reported pro-environmental behaviour. Felix and Johnson (2013) investigated the classroom follow-through portion of the Earthkeepers program. Baierl et al. (2021, 2022) found consistent increases in both knowledge and attitude, and well as interesting relationships between the two, for participants in the Earthkeepers, Sunship Earth, and Sunship III programs. As part of a mixed methods, longitudinal study of students who participated in three consecutive earth education programs (Earthkeepers, Sunship Earth, and Sunship III) over a four-year period, Johnson and Činčera (2019) reported on how participants' understandings of ecological concepts developed over time. Other recent studies of earth education programs have investigated the relationships between attitudes and behaviour (Johnson & Činčera, 2015), issues related to the use of frameworks in programs (Činčera et al., 2020b), values (Činčera et al.,

2020c), empowerment (Činčera et al., 2020d), leaders views and implementation of experiential learning (Činčera et al., 2020a), the relationship between program characteristics and participants' values and behaviours (Johnson & Činčera, 2021), and the relationship between instructional strategies and program outcomes (Johnson & Činčera, 2022).

8.6 Conclusion

Fifty years after Van Matre's initial forays into helping young engage more deeply and personally with the natural world, what is the status of earth education? What have been the impacts of earth education on environmental education? What criticisms of earth education have arisen? Why has earth education not become more widespread? What changes are being implemented for the future? These are the issues for this concluding section.

Earth education work has concentrated on building programs that can be implemented around the world, providing workshops for program leaders, and publishing materials. In the 1980s and 1990s, earth education programs, workshops, and publications spread across North America, Europe, and Australia. In the early 2000s, the spread reached into Asia and South America. Dozens of earth education programs were operating in a wide variety of natural environments and in an even wider variety of cultures. In recent years, while earth education programs, workshops and publications are being established in some new places, particularly Asia, Latin America, and Central and Eastern Europe, the number of programs in many parts of the world has decreased. The major causes include declining educational funding, increased emphasis on standardized tests with accompanying limitations to programs such as earth education that often not considered to be core curriculum, and most recently, the global coronavirus pandemic, which has caused many program centres to close.

In contrast, the need to help people live more joyously and harmoniously with the natural world has certainly not decreased. People around the world are even more cut off from the systems of life that sustain us. Attention to the problem and calls for education to respond are increasing, with a proliferation of education approaches, many described in this book, that has increased. But earth education programs reach a relatively small number of people across the world, and many of those involved in environmental education with are either not aware of earth education or are critical of it. Why is that, and how has earth education influenced the field more broadly?

One reason that earth education is not as well known by environmental educators as it might be is the decision by Van Matre and Associates in 1984 to position earth education as an alternative to environmental education. Van Matre has been loudly critical of environmental education because of his concerns about, among other things, the prominent infusion approach and the focus on the pieces of life rather than the processes of life (see Van Matre, 1990). Little participation of earth

education in environmental education organizations and conferences has led to low visibility to those in the field. In addition, Van Matre's criticisms, issued because he feels strongly that we must have a more serious and widespread response to the environmental crises we face, have put off some people who have taken the criticisms personally.

The approach taken by IEE as an organization has also contributed to the reduced levels of impact. To maintain independence, IEE has avoided any sort of government or corporate support. Instead, the organization has relied on sales of books materials, workshop and speech fees, limited individual donations, and the labor of volunteers to survive. Given the severely limited income from these sources, it is remarkable that IEE still exists 49 years after its founding. The global pandemic, of course, had made the financial situation even more precarious, with the closing of many programs and a more than 2-year loss of income from workshops and speeches.

Another reason that earth education programs have not proliferated more widely is that they are more difficult to implement than many outdoor environmental education approaches. Good education is not easy and offering a high quality "magical learning adventure" is hard work. Staff preparation, materials needed to bring abstract concepts into the concrete and to engage learners in the outdoors, and the time required to have meaningful experiences, all contribute to financial and resource costs that can be prohibitive for some.

Beyond these limiting factors, critiques of earth education have also led to some educators turning their attention elsewhere. One area of concern has been about the inclusion of a focus on feelings, values, and attitudes. Many formal school systems often avoid promoting that they teach values. That is clearly not true (even decisions about what to teach are value-laden), but earth education's explicit and strong focus on feelings has led to concern by those who claim that we should teach only the facts.

Concern that earth education programs are "canned programs" that cannot fit the diverse contexts and cultures around the world has also been a concern for some. This is legitimate issue. How can one program be offered in such a wide variety of ecosystems and cultures and still be meaningful and relevant for all? This is topic deserving of much more space that available here, but here are some key points. The ecological concepts taught in earth education programs are universal. Each ecosystem in the world is unique because the conditions cause these systems to play our differently, but the ways energy flows and materials cycle are the same. Similarly, each earth education program is a magical learning adventure with a structure and organization as well as activities that are the same wherever implemented, but that adventure plays out differently in each location. Each activity is designed to facilitate an experience that enables the learners to engage with an ecological concept or develop feelings, and while the activity design is the same everywhere they are implemented, the experience is going to be different because of the unique environment of each location. Having had the opportunity to experience earth education programs in more than 40 locations around the world, I can attest to the successful and varied combination of engaging with universal ecological concepts with the uniqueness of each local environment that contributes to an experience is far from "canned".

While the programs can fit a wide range of contexts and local leaders can provide a great deal of support for helping the programs to fit with the learners, cultures, and places where they are being enacted, more can be done. More attention is now being paid to the importance of cultural relevance in education, including culturally responsive pedagogy (Gay, 2010) and culturally sustaining pedagogy (Paris & Alim, 2017). Researchers at the University of Arizona are embarking on a project to investigate ways of working with local communities to identify and operationalize culturally relevant perspectives and strategies to better connect earth education programs with the contexts and cultures of the local setting (Knox et al., 2022).

Finally, some have been concerned that earth education programs leave little opportunity for staff/leader creativity. The programs come with a set of pre-designed activities and structure. What is the role of leaders? Rather than being program designers, earth education program leaders are enactors and facilitators. In a way, it is similar to actors who bring a pre-designed play into life; each performance is unique even though the play is the same. But leaders are much more than actors because a key role is to facilitate the experience for the learners who are not passive observers but are also participating in the "play". Providing local examples, reinforcing the concepts and experiences, and enabling the participants to engage in the adventure are critical roles for leaders. Great leaders are vital to the success of earth education programs.

Acclimatization and earth education have had many impacts on outdoor environmental education beyond the actual programs. From the earliest days of Acclimatization, this work has been noted for bringing in the focus on the feelings. Sometimes branded as "those touchy-feely folks", personal engagement with the natural world in positive, immersive ways has been a highlight that has spread widely. The emphasis on a holistic approach as opposed to random isolated activities has also made inroads in the field more broadly. Possibly most importantly, the emphasis on the processes of life, constructing understandings of ecological processes, rather than on the pieces of life (names and numbers) has helped to turn the focus away from rote learning and nature education to toward examining how we live with the systems of life of our planet.

Given all of this, where is earth education today and how is it moving forward? There are some new and recent developments that build on prior work while addressing concerns that have arisen. The work of developing and disseminating holistic programs continues, including promoting and supporting existing programs such as Earthkeepers and continuing to develop new programs such as Lost Treasures for 8–9-year-olds and Earthlings for 2–5-year-olds. New ways of providing options in the fields are also being established. For example, Van Matre's most recent book, Earthwalks: An Alternative Nature Experience (2019), provides a framework and activities for leaders to use to offer nature experiences to learners of all ages, outside of full earth education programs. In a more radical departure from the building of holistic programs is the new venture, Earth Guides, designed to certify outdoor leaders who will create their own experiences. "An Earth Guide focuses on the processes of life not its pieces or places. An Earth Guide emphasizes the whole, not the parts. An Earth Guide stresses that a good relationship means not just loving the

earth, but living in a way that the earth will love us." (The Institute for Earth Education, 2022, p. 3).

Earth education for half a century has enriched the lives of many thousands of people, helping them to live more harmoniously and joyously with the natural world. There is much more to be done, and the urgency is increasing each year. The consensus is that we do not have another 50 years to learn to live in ways that lessen our impact on the systems of life that support us. In the hope that it is not too late for education to play a major role in confronting our environmental crises, new approaches in earth education are emerging at the same time that the long-established focus on holistic programs is being maintained.

Acknowledgments Earth education arose from the visionary work of Steve Van Matre, who continues to guide its development. Hundreds of volunteers have contributed to the development of programs and their implementation in numerous sites around the world.

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Chapter 9
Place-Based Education: Dynamic Response to Current Trends

Paul Bocko, Simon Jorgenson, and Aziza Malik

9.1 Introduction

Place-based education (PBE) is an approach to outdoor environmental education (OEE) that emphasizes human-environment interactions, local investigations, and direct experiences outside of the classroom (Woodhouse & Knapp, 2000). Although many approaches to OEE share these characteristics, PBE is unique by organizing them around the geographic concept of *place* and insisting that all aspects of the local environment (natural, cultural, built) be open to investigation (Brown, 2008; Hutson, 2011; Sobel, 2004). As such, whenever an educator mentions the word 'place' or speaks in terms of 'localizing' curriculum or instruction, we hear echoes of PBE.

Western approaches to PBE took shape during the early progressive education era (1890–1920) with nature study, agricultural education, school gardening, John Dewey, and the project method (Elfer, 2011; Smith & Sobel, 2010). These early forms of PBE tried to connect academic learning to local contexts and issues, engage students with science and the natural world, and build interest in farming and rural life (Kohlstedt, 2010; Stimson, 1919). Indigenous education was place-based in orientation centuries before that, although scholars have only recently begun to acknowledge the influence of Indigenous PBE on the development of PBE as a whole (Seawright, 2014). Indigenous PBE assumes an integration of self, land, and

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_9

community which progressive educators in the West have been trying to recreate for over 100 years (Friedel, 2011; Scully, 2012; Simpson, 2014).

9.2 The Ongoing Evolution of Place-Based Education

The origins of contemporary PBE can be traced to the Orion Society's publication of *Stories in the Land: A Place-Based Environmental Education Anthology* (Elder, 1998), a text that promoted effective PBE with real-world examples from practicing teachers. The evolution of PBE has accelerated recently as local and global communities and their schools have been under great pressure to change and adapt. To consider these pressures, place-based educators from across the Northeast U.S. have been gathering since the spring of 2021 to reimagine PBE in this dynamic context. Reimagining PBE is a tall order in the midst of an ongoing pandemic that has repeatedly demanded keeping us inside our homes for safety. The specific objective of the meetings was to "consider how place-based education can simultaneously address today's needs and bring more joy and connection to students, teachers, and community members" (J. Haley, personal communication, March 22, 2021).

Representatives from the University of Vermont, Shelburne Farms, Antioch University New England, PEER Associates, National Park Service, regional school districts, non-profits, and charitable foundations in the U.S. participated in the meetings. All participants agreed that in addition to the COVID-19 pandemic, recent social justice strife and the growing impact of climate change call for renewed consideration of PBE. There is a need to investigate how the pedagogical model will grow and change in current social and environmental contexts. The outcomes of the meetings are emerging and concrete action steps are still being identified. The emergent conclusions: Educators need to integrate three camps of PBE—liberal, critical, and indigenous (Seawright, 2014)—to address contemporary concerns. And, PBE must address social and ecological systems characterized by inequity, exclusivity, and injustice.

This chapter seeks to continue this dialogue and inspire readers to join in the conversation about PBE as a living and changing model. Our definition of PBE for the purposes of this chapter: intentionally engaging students in the natural, cultural, and built environment as starting points to teach transdisciplinary units that promote individual growth, facilitate collaborative learning, and engage students in active and curious participation for social and environmental improvement. The key strength of the model is how it can be tailored to unique environments, neighborhoods, cities, and regions. The purpose of the chapter is to amplify PBE as a model of social reconstructionism (Brameld, 1955; Counts, 1978; Rugg, 1939). The chapter first describes PBE as a reconstructionist and sociocultural pedagogy. Next, we share our understanding of three PBE approaches as presented by Seawright (2014). The chapter then describes an upper elementary teacher and how she intentionally designs and facilitates PBE in which all three approaches are revealed. We conclude

with the affordances and challenges of PBE experienced by practitioners as they partner with children and youth to seek solutions to social and environmental problems in local contexts.

9.3 Making a Better World by Learning in Place

This chapter is rooted in a specific theory of action: If PreK-12 students are to fully participate as citizens to create a better world as they learn then their classroom teachers must be skilled at designing experiences in which students are engaged in dynamic learning in the natural, cultural, and built environment. Social reconstructionism (Brameld, 1955; Counts, 1978; Rugg, 1939) is the primary conceptual foundation for this theory of action.

George Counts (1978) encouraged students and teachers to "face squarely and courageously every social issue" and "establish an organic relationship with community" (p. 7). Similarly, we believe that schools and students can face up to today's social and environmental challenges, take action to overcome them, and learn important skills and understandings in the process. The organic nature of the relationship between school and community can be mutually beneficial: Students learn while participating in community decision-making and community members gain new energy, ideas, and solutions. Schools must not be relied upon as the one solution to major social and environmental problems and there is ample opportunity for them to have a positive impact in their local communities. Teachers need to follow a developmental approach to achieve these positive outcomes. Sobel (2007) warned that "prematurely recruiting children" to solve overwhelming problems "will just make them feel helpless and hopeless" (p. 15). Early childhood and elementary students contribute when they participate in meaningful PBE and share their learning with the public. Upper elementary, middle, and high school students can progressively participate in PBE that "gradually ups the ante of responsibility" (p. 19) for solutions to social and environmental challenges.

Theodore Brameld (1955), another founder of social reconstructionism, identified the dual need for students to learn for the benefit of themselves and society. Education needs to continuously evolve to match current events and challenges such as we are experiencing today: a more polarized society, COVID-19 pandemic, and a much-needed focus on racial injustice. Students actively participating in the ever-changing context of societal successes and challenges is a worthy endeavor. In the early twentieth century, Harold Rugg codified reconstructionism in curriculum and textbooks in order to pull students into what he called social analysis (Smith & Sobel, 2010). His definition of social analysis integrated students, problem-solving, and social improvement. In this chapter, we propose adding place as a vital element of this synthesis.

Founders of reconstructionism (Brameld, 1955; Counts, 1978; Rugg, 1939) intended to integrate social improvement into the day-to-day activities and materials of schooling. Contemporary scholars have begun to connect PBE and

reconstructionism. Reisberg et al. (2006) sought to synthesize multicultural education, PBE, and social reconstructionist arts education. They wrote that "place-based educators are centrally concerned with the cultural context of teaching and learning and the role of schooling in shaping and reconstructing society" (p. 120). Wattchow and Brown (2011) wrote about a "growing interest in the meaning and significance of place-responsive experiences in education" and "desire to develop a realistic response to the many social and ecological challenges that individuals and communities face in different locations around the world" (p. xxi). Cashman (2016) investigated the intersection of PBE and "border pedagogy" (p. 32), a critical pedagogy that recognizes margins, borders, value in differences, historic and socially-constructed perceptions of place, and the need to cross borders and challenge one's perspectives (p. 32). Citing Ornstein (2011), Cashman (2016) wrote that at the intersection of PBE, border pedagogy, and reconstructionism, the "individual has the opportunity to serve as a change agent, or one who has the ability to modify, even reconstruct the social environment" (p. 33). Thornton et al. (2021) describe "neutrality" (p. 4) in the classroom, avoiding recognition of harmful social and environmental actions and perpetuating harm, as a problem. The authors offer that one response to neutrality is service-learning as a form of PBE "in which learners engage directly with their environment so that the school becomes a continuous reconstruction of experiences which increases students' abilities to direct and control their lives as democratic citizens, and impacts on the greater community" (p. 19). They conclude that "to fully integrate social reconstruction learning requires attention to place" (p. 20).

Early and contemporary social reconstructionism is nested in sociocultural learning theory (Vygotsky, 1978), which proposes that humans develop knowledge, understanding, and skills in social context. Sociocultural learning is a complimentary framework to social reconstructionism given its focus on designing solutions using a variety of materials and through communication with collaborators. Materials and tools are mediators between place, the students, and the learning challenge that aid in the development of "functional relationships within the brain" (p. 133). Social reconstructionism and sociocultural theories envision learning achieved in an inter- and intra-personal, real-world context. Social reconstructionism applied to PBE frames schooling and student participation as real-life social improvement.

9.4 Rebuilding the Connection Between Community and Education

The sociocultural context of teaching and learning coupled with real-life social improvement are more complex endeavors than ever. A recent article (Meckler, 2022) described the variables that are polarizing communities and have led to a crisis for U.S. public education. The variables, in turn, prompt a deeper

investigation of how PBE can thrive and help sustain meaningful education in challenging times. Two intertwined, overarching variables contribute to the increased complexity: an increasingly polarized society and the impact of polarization on social, emotional, and academic learning.

The sources of polarization are racial injustice, additional divisive social issues, and the COVID-19 pandemic. Meckler (2022) reported that "political battles are now a central feature of education" (para. 4). Racial strife was heightened again when George Floyd was murdered in 2020. Schools were pressured to address racism. However, race in the curriculum initiated a response by many state legislatures to propose and pass anti-Critical Race Theory (CRT) bills, limiting if and how teachers can discuss racism with students. The reach of these bills limits "what schools can teach with regard to race, American history, politics, sexual orientation and gender identity" (Gross, 2022). Since January 2021, 290 legislative bills limiting speech in these areas have been proposed by 45 states and 19 have become law in 15 different states (PEN America, 2023). The pandemic causes similar divisions based on decisions related to mask mandates and remote versus in-person schooling. Many parents are frustrated with pandemic policies and "schools are on the defensive" (Meckler, 2022, para. 4).

Racial injustice, restrictive legislation, and pandemic policy have significant negative impacts on social, emotional, and academic learning. "Unprecedented levels of stress" (Meckler, 2022, para. 7) are being reported in schools. This is true for both students and teachers. Student anxiety is high and that is increasing the caseload of school social workers. Teachers are drained emotionally with one of them commenting that they are "exhausted, beaten down and defeated" (Meckler, 2022, para. 24). Social isolation due to remote learning, increased absences, and decreased ability to focus have led to significant academic deficits. Data show that the most severe impact in these areas falls on low-income students and their families.

Randi Weingarten, president of the American Federation of Teachers, responded with optimism to this purported crisis: "If we can rebuild community-education relations, if we can rebuild trust, public education will not only survive but has a real chance to thrive" (para. 63). PBE rests at the intersection of community and education and has great potential to reconstruct society by reconnecting local place, civic life, teaching, and learning.

9.5 Investigating the Intersection of Domination and PBE

The potential for reconstruction and reconnection can be increased if PBE practitioners intentionally confront the injustices presented by Seawright (2014). The author shares that contemporary PBE arose in the context of domination: white supremacy, colonialism, heteropatriarchy, and anthropocentrism (p. 555). In turn, the author urges us to address domination in relation to how we currently design and facilitate PBE learning experiences. Investigating the intersection of domination and PBE allows for a reconstruction of PBE itself. Seawright (2014) describes "three camps

of place-based education" (p. 560) as a framework that can aid in this investigation. The three camps are liberal, critical place-consciousness, and Indigenous PBE.

Liberal PBE or "enlightened localism" (Seawright, 2014, p. 561) uses the environment and community as a starting point for learning. Anderson (2017) suggests a reconstructionist stance for liberal PBE when she writes that "the more we know about where we live and its history, the more we will care about it" (p. 58). In his definition, Sobel (2004) notes that through PBE "community vitality and environmental quality are improved" (p. 7). An emerging example of a liberal PBE school is the Pioneer Springs Community School (PSCS), a public charter school in Charlotte, NC. The school is located within the Croft Historic District, a natural and cultural landscape that includes a pond, forest, a schoolhouse, and historic homestead on the school campus. PSCS is currently adding grade levels to their high school. High school teachers and school leaders have chosen PBE as an integrative academic focus.

Critical place-consciousness PBE builds on the foundation of the liberal camp. The approach emphasizes the "inherent conflict of places that are wrapped up in issues of colonization, race, class, gender" (Seawright, 2014, p. 561) that must be considered when facilitating PBE. Just as important as improving student achievement, critical place-consciousness challenges educators to confront equity assumptions about the places we inhabit. Social reconstructionism is fundamental to the approach given that practitioners must rethink "schooling in the context of places we inhabit" (p. 561) and begin to disrupt injustice. The Common Ground High School, Urban Farm, and Environmental Education Center in New Haven, CT is a strong example of a critical place-conscious school. Their mission, in part, invites community members to "contribute to a just and sustainable world" (Common Ground High School, 2022). The school's 10th grade curriculum partners students with community changemakers, leaders, and artists to create theatrical performances, short films, and protest art. The public exhibitions intend to build understanding of how oppression plays out in their community. Teachers also participate in staff-led professional development designed to help them practice anti-racism and learn with residents in the neighborhoods that students call home.

Indigenous people have long been on the receiving end of racism and colonialism that Seawright (2014) urges us to address. The third approach, Indigenous PBE, offers a different way to know and understand place given that Indigenous ways of teaching and learning are the "most longstanding place-based educational tradition" (p. 561). Indigenous PBE carries "preexisting ethics of social and ecological sustainability" (p. 561). This approach is reconstructionist because Indigenous cultures seek unity, sustainability, and a better relationship with the natural world, quite the opposite of holding dominion over it. Atowi is an initiative of the Elnu Abenaki community in Wantastegok, also Brattleboro, Vermont in the Northeast U.S. The mission of the project is to provide "a place-based center to engage with the broader community, while enhancing capacity and creating awareness for future dialogue" (Atowi, 2023). Further, the project seeks to "affirm Native relationships to the Land and its inhabitants, raise Indigenous voices, and foster inclusion with understanding, in place" (Atowi, 2023).

The three PBE camps provide varied perspectives that can strengthen educators work to confront injustice and shift away from a domination mindset. By reflecting on PBE practice using these approaches and intentionally designing teaching and learning to make a better world, we can disrupt longstanding "modes of domination" (Seawright, 2014, p. 555) and practice social reconstructionism. In addition to the brief example of each approach provided here, there are exemplary place-based educators who integrate all three camps through their practice. One such case is 4th and 5th grade teacher Aziza Malik and her students at Champlain Elementary School in Burlington, VT, U.S.

9.6 How One Teacher Integrates the Three Camps of PBE

Aziza Malik first learned about PBE by planning field-based lessons as an undergraduate student at Humboldt State University in Arcata, California. One unit compared water treatment plants in Eureka and Arcata. She then apprenticed at Shelburne Farms in Vermont, where she used the farm's buildings and grounds (including the cemetery) to teach agriculture, history, and architecture and learned to read the local landscape by interpreting its natural and cultural features. Although Aziza imagined a career in environmental education, she eventually pursued alternative certification as a classroom teacher through Vermont's peer-review process so she could be more connected to learners and impact more meaningful social change through her teaching. The remainder of this section describes how Aziza integrates the liberal, critical, and Indigenous approaches to PBE noted by Seawright (2014).

In terms of liberal PBE, Aziza is always looking for opportunities to creatively connect the curricular standards–what she needs to teach–to the environment and community right around her, whether that's Champlain Elementary School's garden, a mural artist working just down the street from the school, or Burlington's electric power plant, McNeil Generation Station. These projects typically combine learning with social/environmental action. During an integrated unit on land and water, for example, Aziza's class worked with the UVM Watershed Alliance to monitor the water quality of Englesby Brook, which runs right next to the school. Not only did students learn about land/water interactions and how to monitor stream quality, they also took action by removing invasive species, planting a riparian buffer to control erosion, and creating videos and comics to educate the Burlington public about local watershed health.

Many of Aziza's PBE projects involve community partners such as the UVM Watershed Alliance who can provide content expertise and technical support, and she is intent that her partners receive as much as they give for their time. Currently, Aziza and her students are working with Burlington Parks, Recreation, and Waterfront (BRPW) to establish a wildlife corridor at the school, a project that involves planting many native trees that will connect two separated wooded habitats adjacent to the school. In this case, BRPW provides expertise and support around urban tree planting and the school provides a site for advancing Burlington's

climate change goals. UVM education and environmental students will help Champlain Elementary students monitor and track wildlife sightings along the newly established corridor.

With the arts and community partners as a base, Aziza has also implemented more critical forms of PBE through the lens of social justice to address more troubling histories of place, such as colonization and racism. To teach students about the history of slavery and racial discrimination, Aziza partnered with Clemmons Family Farm–one of the largest African-American-owned farms in Vermont–on a pilot curriculum that used art and music to explore the transatlantic slave trade and Jim Crow era through the lenses of travel and migration. The unit included a live artist engagement with a local Afro-jazz singer and culminated with students creating a soundscape of a slave ship's human cargo hold with the school's music teacher. When teaching difficult topics such as this, Aziza uses the arts, writing, and restorative circles to create spaces and opportunities for students to process their feelings, reflect on their experience, and create shared understanding.

These more critical PBE projects also provide students an opportunity to participate in setting right the harms of the past. In the fall of 2019, Aziza and the Burlington School District celebrated Vermont's first Indigenous People's Day by partnering with members of the local Indigenous community. As part of this district-wide celebration, Aziza worked with local Abenaki educator and culture bearer Judy Dow on a land acknowledgement sign made from students pressing culturally significant Indigenous plants into locally dug clay. The sign now rests permanently in front of the school as a daily reminder to students of the complex history of the school's land and their restored connection to the Abenaki community. Aziza created a similar opportunity for students when the school raised the Black Lives Matter flag to honor racial justice. In that case, they interviewed members of A2VT**,** a local global-pop band composed of three young African refugees, and then sang and danced alongside the band during a special flag raising ceremony. In each of these examples, students processed difficult content by building real-world connections through the arts with members of the local BIPOC community.

Aziza connected again with Abenaki educator Judy Dow for six weeks during the fall of 2021 with support from a Vermont Arts Council grant she was awarded. This place-based unit integrated the study of climate change with the immigration of people and emigration of animals. During one lesson, Judy told the students how she used 'sit spots' to learn the story of a place and how that story was changing over time. Judy also taught the students how to weave baskets out of yogurt containers and different colored twine yarns, each color yarn representing a different part of their climate change learning. Students read articles and made posters of local climate change impacts and then presented their posters and baskets to their peers, parents, and guardians during a special afternoon event.

Aziza credits Judy for introducing her to Indigenous approaches to PBE. She had never imagined that weaving simple baskets could so deeply integrate the curriculum, a goal of hers all along. Judy also taught Aziza to 'flip' her Western-based assumptions to gain a new perspective on the world. For Aziza and many Western-trained teachers, the ecology of education places children at the center of a ring of

concentric circles that moves progressively outward from 'self' toward a distant and inanimate 'environment'. Judy flipped this assumption for Aziza by moving the environment back to the center of the circle, which is where it belonged, she said, when you treat land as family.

Time to implement PBE is one of Aziza's primary challenges as the daily schedule in elementary schools is tight and highly structured, leaving little room for extended field inquiries. To address this challenge, Aziza looks for opportunities to connect each place she visits to multiple subject areas and often uses writing as an integrating context. It also takes time to connect with partners, email back and forth, and communicate with parents about logistics and permissions, etc. But Aziza believes the benefits in terms of students' social and emotional learning and connection to place are worth it. Funding PBE in terms of project materials and partner compensation is another challenge, one she addressed by writing several (~5) small grant proposals a year and always looking for new funding opportunities, several of which have become annual sources.

In implementing PBE, Aziza is fortunate to have a supportive school principal, district superintendent, and parent community. She is also fortunate to have a strong social network of individuals and organizations in Burlington, many of whom have become PBE partners, a network she developed by working at several small businesses and non-profits before seeking alternative licensure as a teacher. She imagines that teachers who go right into the classroom after their undergraduate training would have a more difficult time implementing the kind of PBE she values as they might not have the same social network of partners in place.

During the COVID-19 pandemic, because teachers could not use buses for transportation, Aziza started taking her class on weekly walking tours to visit Oakledge Park and study its many layers–history, geology, water, geography–through writing, photography, and mapping. They also took time to sit and wonder. What Aziza liked most about these trips was the casual conversations that emerged as she and her students walked back and forth together to the park and how walking made room for them to simply breathe and be human together. In addition to these social and emotional benefits, Aziza has noticed her students learning to care for and love more the places they visit while bringing much beauty and joy to the community. PBE enables Aziza to stay responsive to student needs, and the needs of her community, in a rapidly changing world.

9.7 PBE Affordances and Challenges

As this rich description of integration shows, there are multiple affordances and challenges encountered in PBE. There is a growing body of literature that documents the beneficial outcomes and barriers (Altman et al., 2015; Chawla & Escalante, 2007; Duffin et al., 2004; Lieberman & Hoody, 1998; Lowenstein & Smith, 2017; Rote et al., 2015). Affordances highlighted by Aziza's teaching include social improvement, environmental stewardship, improved social emotional

learning, and strong community networks and partnerships. Curriculum connection and school leaders are factors that can easily be affordances or challenges. The notable challenges include time, transportation, and funding.

Meaningful ways that students contribute to social and environmental improvement are woven throughout Aziza's work. Her work with her students to improve water quality, raise awareness about racism, and install an Abenaki land acknowledgement are examples of reconstructionism (Brameld, 1955; Counts, 1978; Rugg, 1939). The environmental stewardship displayed by Aziza and her students is consistent with published PBE evaluations. One evaluation (Rote et al., 2015) even found that students reported that environmental protection and stewardship, connected to their own achievement and "community vitality" (p. 11), was fun. The social emotional benefits of PBE, such as enjoyment, are important to consider in polarized times. Local networks extending beyond the schoolyard support student learning (Rote et al., 2015). A strong community network "enables students to know, relate to, and appreciate their communities more than before" (p. 8). The formation of partnerships is imperative. Eight organizations and individuals are noted for partnering with Aziza's class, not including parents and multiple undergraduate students. Clark (2008) noted that strong partnerships are "at the core" of PBE initiatives and "contain a multitude of different perspectives, life experiences, and points of view" (p. 23).

Supportive school leadership is essential for teachers as they coordinate partnerships (Gruenwald & Smith, 2008; Smith & Sobel, 2010). In our PBE work with schools, we find many teachers with energetic support from school leadership. Leaders give teachers the freedom to try PBE, coordinate with parents and community partners, seek funding, and carve out time in the schedule for planning. Unfortunately, this administrative support is not always in place. An emergent movement of PBE school leaders in the Northeast U.S. are, however, creating communities of practice focused on PBE leadership. One example is a professional learning community (PLC) in Maine. Supported by the Inside Outside Network of Antioch University New England, a small number of superintendents and principals meet monthly to share successes, discuss challenges, and nurture their place-based leadership.

Addressing curriculum standards is much on the mind of these school leaders. Aziza demonstrates how PBE addresses numerous curriculum standards in multiple subject areas. PBE is an inherently interdisciplinary outdoor environmental education model. Teachers do find it challenging to see how PBE can help with curricular goals. Multiple reports, however, demonstrate that coupling PBE with academic content pays off. In the earliest days of what we are now calling PBE, Lieberman and Hoody (1998) found that students who participate in PBE achieve better standardized test scores. Every case study in Rote et al. (2015) cites curriculum as a primary focus of PBE. Duffin et al. (2004) found that PBE can "enhance educators' ability to meet curriculum requirements" (p. 13).

Further challenges than those related to leadership and curriculum can hinder progress. Lack of time for organizing PBE and fitting it within the schedule is a commonly identified barrier (Anderson, 2017; Demarest, 2014; Duffin et al., 2004;

Powers, 2004). This challenge can be overcome: Schools like the Cottonwood School of Civics and Science in Portland, OR created the position of Fieldwork and PBE Coordinator to aid teachers. The Cottonwood School and Pioneer Springs Community School (PSCS) in North Carolina build their curriculum on the foundation of PBE. Scheduled time is less of an issue when PBE is the chosen curriculum model. Transportation by bus, directly linked to the scarcity of funding, consistently has teachers second guessing PBE (Anderson, 2017; Demarest, 2014). Non-profit partners, such as the Horatio Colony House Museum & Nature Preserve and Historical Society of Cheshire County in Keene, NH, who want to partner with schools on PBE now include modest amounts of transportation funds in their budgets. Often though, more significant amounts of funding are required for PBE activities. Aziza demonstrates that a teacher can be successful in the fundraising endeavor. And, there may be more sustainable ways to structure schools to help solidify affordances and overcome challenges. A pivotal position like the Fieldwork and PBE Coordinator at the Cottonwood School helps here as well. The person filling that embedded role can seek more significant funding sources to support PBE initiatives.

9.8 Conclusion: A Responsive Model

PBE is an Outdoor Environmental Education (OEE) model rooted in the concept of place: the intentional engagement of the natural, cultural, and built environment as context for learning. PBE is further rooted in the early progressive education era (1890–1920) with the exploration of the natural world, science, and farming. Our purpose in this chapter was to amplify PBE as a model of social reconstructionism. We demonstrated throughout the chapter that PBE is a reconstructionist pedagogical model that can respond to current social and environmental concerns affecting societal polarization. Teachers and students who participate in PBE intentionally address community problems and engage with community partners with the goal of social and environmental improvement. In particular, we built on the work of social reconstructionism founders to show that numerous contemporary scholars are explicating the links between PBE and learning for social improvement.

We investigated how Seawright (2014) describes the intersection of PBE and white supremacy, colonialism, and anthropocentrism in three different camps of PBE. The liberal, critical place-consciousness, and Indigenous approaches are reconstructionist in nature in that they call for social and environmental improvement via civic engagement, facing up to conflict due to colonization, and recognizing Indigenous cultures' ethics of sustainability. Teacher Aziza Malik and her students provided a rich example of a public school teacher who not only employs PBE but also exemplifies how the three camps of PBE can be practiced.

This chapter furthers the conversation started by dedicated PBE practitioners: reimagining PBE in response to a polarized society struggling with a pandemic, the

impacts of climate change, and racial injustice. PBE is like any other pedagogy, attempting to maintain its integrity while evolving to meet the needs of an ever-changing world. In this chapter, we continue the work of fellow scholars (Cashman, 2016; Reisberg et al., 2006); Seawright, 2014; Thornton et al., 2021) to challenge conventional ideas about PBE's relationship to social improvement, environmental stewardship, and critical pedagogy. In doing so, the chapter strengthens the argument for how PBE can play a role in making a better world.

Importantly, the conversation about how PBE responds and continues to change according to current trends of a dynamic world must continue. The positive outcomes and successes of PBE can be used to increase the model's use in schools. The challenges need more attention in order to make PBE more feasible for classroom teachers. One outcome of the pandemic is a deeper recognition that outdoor learning is healthier. The dynamism encountered through PBE and all OEE goes much further to include increased motivation, critical thinking skills, and content learning.

Acknowledgments Deepest thanks to co-author Aziza Malik for her innovation and hard work to design and lead meaningful place-based learning experiences. We also acknowledge our other close colleagues who inspire our work and share in it: Aimee Arandia Østensen, Jen Cirillo, and Joan Haley from Shelburne Farms, colleagues at PEER Associates, and fellow faculty at Antioch University New England and the University of Vermont.

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Chapter 10
Forest School – The UK Context: How This Nature-Based Outdoor Education Became a New 'Term' in the UK and What Challenges Does it Face in 2022?

Jon Cree

10.1 Introduction

I am sat on the train to Newcastle, a city in the north east of England, and a passenger next to me leans over this screen and says "I see you are writing about Forest School…my two daughters go to a Forest School." I reply and ask how old are they and where do they attend. "Oh, through their primary school – they did it in reception (3–5 years old) and now do it about once a term." I smile! "What is Forest School to you?" the person says as he picks up on my ironic smile! This is a symptomatic conversation. Forest School is now a term embedded in the UK education system and many folk now have heard the term. The irony is that many see it as 'bushcraft' skills and 'playtime in the woods' but it has principles and practices that are so much more, often challenged by the different paradigms in the UK education system in 2022.

In this chapter, I will look briefly at the UK Forest School definitions, history, the ethos, values and principles, some examples of practice and current challenges.

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_10

10.2 What Is a Forest School

It is a hard thing to define. While there are many books on Forest Schools and Learning in Nature, the term has become a catch all, especially at nursery/kindergarten and primary school level. I would like to share a vignette of a Forest School session with a special needs group at Bishops Wood Centre in Worcestershire from a few years ago to give a feel of one setting running Forest School.

> (A mixed group of 10–13 year old's.)
>
> It's mid-January as I approach the 'Forest School gate' – a rope between two posts – I hear the sounds of delight at the far end of the woodland clearing, a voice shouting from behind a tree, "I'm over here!" and above this a gentle wind blowing through the oaks and birches. There is also a robin singing its heart out despite the exuberant sounds of people – both old and young. I gently lift the rope and walk the muddy path that has obviously had feet splashing sploshing everywhere and there are two planks. Maybe a bridge protecting human feet from a troll? As I approach the 'base camp' there is a small fire surrounded by wooden planks on tree stumps, and next to this a semi-permanent shelter with a basket and trolley. The basket is open and spilling out of it are a camo-net and ropes. Next to that are some stakes and what look like home-made mallets. On one of the benches are two youngsters making a batter – half of which seems to have made its way on to the bench. They are both beating the batter in tandem…and they smile at me and ask if I like pancakes… "Pancakes with crab apply jelly wot I made". The squeals of delight came from two children and an adult on a rope swing and the adult near the pancake makers is busy weaving a basket. There is a slightly older girl wandering and talking to herself who seems to be threading something on to a piece of wool as she walks. The four that are running everywhere are completely engrossed in their own hide and seek game. The adult greets me and says, "Just in time for dinner, Jon!" and she turns to one of the pancake makers. "Do you reckon it's lunchtime yet Holly?" Holly replies, "Let's just wait a bit for the first pancake to be ready then we'll call everyone else over." A minute later both pancake makers make a loud bird type call. Everyone returns and asks if it is indeed lunch time and without hesitation all kick into gear and gather the handwashing materials….

This scene is indicative of what you instinctively feel is a playful learning community that is looking after its own needs, interacting with the woodland in a playful yet respectful way, and where it is tricky to see who is leading who. It's Forest School underpinned by a certain ethos and values!

The definition of Forest School in the UK, arrived at after an extensive consultation in 2010 and 2011, is

> Forest School is an inspirational process offering ALL learners regular opportunities to achieve and develop confidence and self-esteem through hands-on learning experiences in a woodland or natural environment with trees. Forest School is a specialized learning approach that sits within and compliments the wider context of outdoor learning.
>
> From www.forestschoolassociation.org.uk

10.3 Evolution of the Term Forest School (in the UK)

The term Forest School was formulated in 1993 by a group of nursery nurses at Bridgewater College, under the direction of Gordon Woodall, who established and named their own 'Forest School'. This was after a visit to Denmark, led by Jane Williams-Siegfredson, to experience some early years practice in Denmark. The history of Forest school has been written about in a number of places (see Knight, 2013a; Maynard, 2007; Cree & McCree, 2012/2013; Gans, 2018) and taken much of its inspiration from the Scandinavian pedagogy, particularly in the early years. Although considered as 'new', Forest School is based on many years of tradition of outdoor learning pedagogy, developing the 'whole' being and often less acknowledged land-based traditions. It is always good practice to look at the theories and traditions which this 'modern' nature-based learning is 'leaning into', enabling us to apply some universal principles and 'build' new constructs, as well as validate old ones. One could say the play & community-based pedagogy has been heavily influenced by many indigenous cultures, their learning and observation of young people and the natural world. Witness the growth of modern-day movements like the 'Art of Mentoring', 'School of Lost Borders', 'Forest School Camps' and more. The Chinese and Persian philosophers such as Lao Tzu and Rumi, and the Jain, Buddhist and Yogic traditions, to name but a few, of the ancient Indian philosophies have also had influence. Indeed the 'Outdoor Schools' movement or 'Gurukula' in India with philosophers and educators such as Rabrindranath Tagore and Krishnamurti have had an impact on UK 'alternative' outdoor education in the twentieth century with the establishment of Dartington Arts College and Brockwood.

The training in the UK, which started at Bridgewater College, includes acknowledgement of theorists such as Froebel, Piaget, Vygotsky and Comenius. Many would argue that Froebel is probably one of the largest influencers on Forest School pedagogy in the UK because of his belief in marrying natural world contact and connection with learning and play. Vygotsky, added another dimension in the early twentieth century, 100 years later – the social and holistic/gestalt nature of true learning. He emphasised the importance of learning with others (community of learners), language cementing learning and more than knowledgeable peers and teachers helping learners meet their true potential. Vygotsky's 'More Than Knowledgeable Other' (MKO) is an important part of Forest School. Once we see the 'big picture' by integrating all the areas of development we see another meaning/aspect of learning and development – the *'gestalt'*.

Other UK twentieth century influencers of the current Forest School provision that were born out of the world wars were the Scout and Guide movement, Woodcraft Folk, Forest School Camps, Susan Isaacs and the outdoor schools of the 1930's, and 'outward bound' movements. In other parts of the world, we see the emergence of various nature education 'movements' in the 20th and early twenty-first century, in places such as Scandinavia, Germany, Australia, New Zealand, Canada, South

Korea and Australia (there are many more!). These countries all have 'nature based' educations that are culturally different – Abornpedagogue, Fruilitsliv, Skogsmulle, Metsamoori, Wald Kindergarten, Bush Kinda and Te Whāriki, to name but a few of these 'approaches' (McCree, 2015).

It seems there has been an upsurge in nature connection initiatives in the UK and across the world, from organisations such as the National Trust, Royal Society of Protection of Birds and Wildlife Trusts to name but a few in the UK. Many of these are now using the newly defined Nature Connection indices in their outdoor education programmes as explored by Derby University Psychologist Miles Richardson, see https://www.derby.ac.uk/research/centres-groups/nature-connectedness-research-group/ . Briefly these cover 5 pathways;

- Senses – tuning in to nature through the senses
- Emotion – feeling alive through the emotions and feelings nature brings
- Beauty – noticing nature's beauty
- Meaning – nature bringing meaning to our lives
- Compassion – caring and taking action for nature

The international 'natural play space pedagogies' I have mentioned above and growing dissatisfaction with a crowded industrial, outcome-based UK curriculum saw the Bridgwater Nurses lighting the blue touch paper in 1993 for an incredible growth in 'Forest School' in the UK. Forest School is now seen all over the UK as a part of many schools or run as an informal programme and is growing in many countries (Knight, 2013b and McCree, 2015).

As I write there will be thousands of early years – even pre-tots, primary and secondary school students, special needs groups, families and certain adult groups experiencing nature education programmes, often under the name of Forest School in many different settings and institutions. Forest School sits within the wider context of nature-based education. Rough statistics estimate conservatively that we had in 2011 (the last count) 13,000 learners accessing regular longer – term Forest School programmes (Wellings, 2012), and in 2015 there were estimated to be 17,000 trained Forest School professionals in the UK at all levels. The last survey carried out at a local authority level was in Worcestershire in 2013 showed there were 350 settings in the county running some sort of Forest School provision. All of these groups will have their theoretical and practical underpinning, to one degree or other, based on practitioners, theorists and pragmatists of history. No statistics have been collected more recently of how widespread Forest School has become, I would hazard a guess there are thousands of settings calling their provision 'Forest School'. The Forest School Association (FSA) does have a recognised providers scheme but this is only for those who are willing to step forward and use the scheme as a reflective tool for their practise and gain a nationally recognised 'badge' of quality. As I write this there are approximately 150 settings either registered or being registered under this 'benchmark' scheme (see Forest School Association Annual Report, 2022a).

The Forest School training continues to be delivered by a number of providers. The current numbers are hard to ascertain, however, there are 20 FSA UK Endorsed training providers, both approved and in approval (see Forest School Association Annual Report, 2022b). The FSA recognises 9 UK Government approved awarding bodies that accredit Forest School training. Most training is conducted to a level 3 and is an integral part of the principles described above and outlined in more detail below. Educators from different backgrounds can gain the qualification from teachers, through to many independent providers and NGO educators.

Even the UK government has recognised this now, as an important 'movement' in having a role in improving the health and well-being of the nation. Forest School is named in its 25-year environmental action plan – published in January 2018 (DEFRA, 2018). With the rise in mental health issues in many developed countries, in particular the UK, a Nature Connection and Forest School approach is increasingly being seen as a 'green intervention' for vulnerable people.

10.4 Ethos, Values and Principles of Forest School

In 2012, as a result of almost 3 years of extensive consultation the UK established its own Forest School professional body, the Forest School Association (FSA). The six principles, outlined below, were formulated through consultations with almost 2000 practitioners and a final consultation exercise at a national UK Forest School conference in Swindon in 2011 (see Wellings, 2012). It is significant that this conference was addressed by Sue Palmer, who spearheads the Upstart movement in Scotland to try and raise the school entry age to 7, as per Scandinavia, and have a more play based, outdoor curriculum (Palmer, 2016). These are informed by an ethos and 'values' that Forest School practitioners share.

In a nutshell this is a holistic form of education creating a vibrant nature-based learning community. 'Holistic' is a term often banded around in the education world. A holistic approach is an 'integrated' approach to learning which means accepting the 'whole' person – warts and all. It is an approach that works with everyone's needs and sense of self – accepting we are all imperfect, but we are WHO WE ARE and worthy of love and acceptance. A tall order, but very much something that underpins the practice of Forest School and we have to struggle with it. What we are hoping to develop from these values is the building of resilience, creativity, self-worth, emotional literacy, connection to and caring for the non-human world, so our planet and society thrives. Forest School is, therefore, trying to create something akin to a 'family full of kinship' with human and non-humans 'being' together – a village of learning and living. The important aspects that make Forest School special are the playful 'equal relationships', and the deeply empathic connections that develop.

It is love of the natural world and humanity that uplifts and becomes what cannot be 'valued' in a monetary way. The spiritual communal value of birdsong, for example, and all other 'more than human' beings along with a 'giving back', underpins Forest School and practice within 'natural law'.

The overall goal of Forest School is "to help people develop into resilient, creative compassionate individuals who value the natural world (human and non-human) and care for every living being's welfare." (Cree and Robb, 2021). These goals rely on the intrinsic values that underpin Forest School principles and practice. Cree and Robb point out that these values, which need to be constantly revisited, are at the heart of what we do as nature educators and extend to the various aspects of Forest School practice.

There are six Forest School principles that have been explicitly expressed, on the UK Forest School Association (FSA) website, that are underpinned by the above values. During the consultation process working criteria for each principle were developed – see https://forestschoolassociation.org/full-principles-and-criteria-for-good-practice/ for details.

The six principles are:

- Forest School is a long-term process of regular sessions, rather than one-off or infrequent visits; the cycle of planning, observation, adaptation and review links each session.
- Forest School takes place in a woodland or natural environment to support the development of a lifelong relationship between the learner and the natural world.
- Forest School uses a range of learner-centred processes to create a community for being, development and learning.
- Forest School aims to promote the holistic development of all involved, fostering resilient, confident, independent and creative learners.
- Forest School offers learners the opportunity to take supported risks appropriate to the environment and to themselves.
- Forest School is run by qualified Forest School practitioners, who continuously maintain and develop their professional practice

Cree and Robb (2021) expressed these principles in their own words to try an encapsulate both the principle and values that they felt are implicit in each principle;

- Forest School is a long-term programme of regular contact with the natural world that make deeper, caring human and nature connections
- Forest School develops a relationship between learners and the natural world that features mutuality and compassion.
- Forest School practitioners work in a learner centered way whereby an 'equal' learning community is developed where there is a combination of autonomous and communal learning, featuring joint decision making regarding the learning. Forest School follows a constructivist (see footnote) approach whereby the learning, in and of, the real natural world and themselves emerges.
- Forest School develops the whole person, supporting cognitive processes and fostering creative, resilient, physically healthy independent learners

- Forest School encourages risk-taking in a safe context, enabling learners to move into their learning zones where they can manage and 'own' their own risks, be they emotional, physical, cognitive or social risks
- Forest School is facilitated by practitioners who are qualified and continually reflect on, question and develop, their own learning and Forest School facilitation.

A healthy building needs sound foundation – a healthy human needs 'good' foundations. It is my belief that 'good' essentially needs to include 'good' for the living world, humans and non-humans alike, to create human systems that protect and repair nature's ecosystems. Applying a Forest School approach to the outdoors, embodies an experience in which children can experiment, explore, receive nature and intrinsically learn to value the living world.

> *And what is lovely is to see a developing caring attitude towards each other and nature* (Deborah Thomas – Forest School leader in training, West Sussex 2017).

10.5 How Effective Has the Forest School Programme Been in Delivering the Above Principles and Realizing the Aspirations I Have Outlined Here?

There have been a number of universities involved in research into Forest School – recent notable papers Plymouth University (see Waite & Goodenough, 2018), Kingston University (see Harris, 2015) and for a critical look into Forest School see Sackville and Davenport's book 'Critical Issues in Forest School' (2019). An extensive piece of research into the barriers to delivering Forest School, as per the criteria I have outlined above, 'Bringing Children Closer to Nature' was carried out by the Sylva Foundation jointly with the Ashden Trust and the FSA (Hemery et al., 2019).

Sue Waite and Goodenough (2018), Plymouth University, outline in their latest study how Forest School can create an 'alternative pedagogy' in the English school system. They recognise Forest School can indeed provide space for a culturally 'lighter' and more inclusive pedagogy, but warn how the learner led and 'light' culture can get superseded –

> With the increasing presence of FS within UK schools, higher level structural political influences inevitably impinge on how FS is positioned and enacted in the mainstream arena. The learner-led principle may be superseded by a focus on curriculum objectives when co-located within schooling. (Waite & Goodenough, 2018)

The Sylva study in 2019, one of the largest to date in terms of numbers of practitioners, looked at barriers to the implementation of what is often referred to as 'full fat' Forest School, i.e., a programme that adheres to the six principles, in wooded and forested areas in the UK, mostly England. Interestingly most realised the importance of long-term connection and regular visits to the woodland in order to build reciprocal relationships between the human and non-human. Lack of funding, a

crowded curriculum and poor support from senior management in schools were seen as the biggest barriers to creating a truly long term 'quality' programme.

Well-being training and woodland care were seen as two of the most important needs at this time for educators. This, I would suggest, has grown with the pandemic and state of the UK woodlands, as outlined in the UK 25-year Environmental Action Plan (DEFRA, 2018) and England Trees Action Plan 2021–24 (DEFRA, 2021).

One of the key findings was the need to justify Forest School within the school curriculum and the need for a policy shift at government level such that outdoor and nature-based learning should be a requirement. Teachers needed more tools to measure the impacts of Forest School, which can be a tall order, given the recognition of the overall value from all educators involved in the survey was the holistic nature of Forest School.

To that end the Forest School Association is developing an App to measure the wellbeing impacts of Forest School (FSA Annual Report, 2022b), and in 2021 the FSA started a Nature Premium campaign to get more government funding for weekly nature contact in schools (Nature Premium, 2022). This campaign is gaining momentum as the government, and various recent surveys, have shown how important nature contact is for learning, health and well-being (Natural England, 2021).

There are a number of Forest School case studies on the FSA recognised providers website showing schools and other settings running Forest School programmes as outlined by the principles described above. This is despite the financial and curriculum limitations of an English curriculum that doesn't have nature-based learning specified as a requirement and still spends a large majority of its time on literacy, numeracy and science and technology outcomes with pretty tight parameters that leave little room for teacher creativity.

To show how Forest School has adapted to the political and social situation and still trying to maintain the ethos and principles here is one case study of Bramblewood, a 2-acre site, right in the heart of Worcester City, see https://www.thebramblewood-project.org.uk/

10.6 Bramblewood Forest School Case Study

Like many programmes run in the UK this is a provision that works with schools but is independent of the constraints of an outcome-based curriculum. Bramblewood Forest School opened in 2018 on an allotment (community gardening plots) site, situated next to the main Worcester to Birmingham canal, at the heart of Worcester City in the West Midlands of the UK. 18 months before, it was a 1.3 acre site of overgrown allotments, open woodland 'scrub' with a fairly new hazel coppice (planted about 20 years ago). The whole allotment site, including Bramblewood, occupies approximately 9 acres; all owned and leased by Worcester City Council (Fig. 10.1).

When the two women who started the project, Helen and Sam, arrived, got the keys, took on the lease and fell in love with the land, the whole site was covered in

Fig. 10.1 Worcester City and Bramblewood – the forest school site is to the left of the allotments

bramble. Gradually, through extensive clearing of bramble and 'needles', it was a site for homeless in the city, and much tending they revealed a healthy hazel coppice, many cherry plum trees and larger ash, horsechestnut and willow trees. They had uncovered a real 'oasis' of life – a green beating heart of the city full of insects, small mammals, birdlife, badgers and a resident fox overseen by buzzards and raven.

The programme started with two Saturday Forest School sessions, one in the morning and one in the afternoon which have continued (on and off through COVID) and have welcomed, for 4 years now, regular children between the ages of 5 and 12. They all pay a price depending on the resources of the household. There are a number on bursaries selected by the two local schools according to need and vulnerability. These bursaries are gained from fundraising activities by the Bramblewood adult volunteers and sponsorship from local authorities and 'green' businesses. During the week there are 3 days provision of Forest School for children 'referred' to the organisation who have specific needs which are not being met by other services or provision (be they schools or alternative provision), along with a growing number of children who are home educated. The site is responding to, for example, one child, who is 'flexischooling', and two who are unable to access any other provision, as outlined in their own education behaviour plans. The latter are all funded through central funds allocated locally to the local authority.

Alongside this provision, the other days see adults attending sessions for volunteering and their own wellbeing, homeless and mental health recovery groups also regularly attend. They too follow the Forest School ethos as outlined in the six principles. There is always something to do on this site; beit green woodwork,

Fig. 10.2 Celebrating the seasons is a key aspect of forest school provision at Bramblewood – Beltane crown marking the time of flowering and energy flow in spring

maintaining the compost toilet and other structures on site, various crafts, storytelling, journaling, sit spotting, planting and tending a Forest Garden within the site, establishing a tree nursery, maintaining paths, putting up birdboxes, checking on hedgehog boxes, etc., etc. And importantly always cooking and gathering round the fire. Bramblewood is a community refuge, that has already rippled out into the community regarding those involved in the site have enriched other garden and public spaces increasing biodiversity and emboldening nature connection elsewhere in the city (Figs. 10.2, 10.3, and 10.4).

Fig. 10.3 Two weekly forest school learners muse at the entrance to the Bramblewood site – deepening friendship with each other and the land

Central to the ethos here is a combination of nature connection and a learner/play centred approach, nurturing learners who have had their own anxieties and traumas, especially in these times. Through the funding from various sources the organisation, a community interest company, has secured enough funds to employ 3 part time staff, all Forest School trained. While this is not 'secured' long term, such are the times, the organisation has now established itself on a fairly firm footing. Here is an illustration of the Bramblewood ethos, underpinned by the Forest School principles (Fig, 10.5).

Fig. 10.4 The all important forest school community gathering place – cooking and chatting!

This setting shows how the non-governmental sector is trying hard to work with schools and social systems that are struggling and is achieving good outcomes for learners in terms of their own growth and development and their connections to nature such that a caring reciprocal relationship is developing.

The recent growing 'well-being and mental health' need for green spaces in urban settings for the human and 'more than human' communities has seen an increase in this type of Forest School provision throughout the UK. In London, for example, this type of provision working with schools, who do see the importance of well-being and nature connection, has seen a growth in independent providers, working alongside the established nature-based NGO's such as the wildlife trusts, RSPB, London Royal Parks etc.

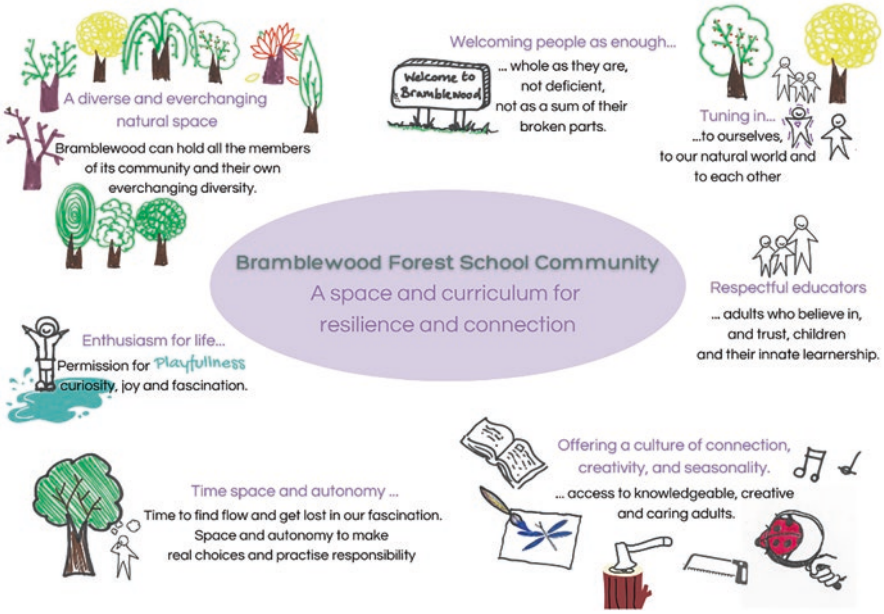

Fig. 10.5 The Bramblewood ethos

10.7 Conclusion

What I have outlined above are the positive aspects of provision that is trying it's hardest to implement the principles. However, for every one of these settings there are many that are running some sort of outdoor learning provision that involves infrequent visits to green space and possibly, if lucky, a residential programme at some point in their education. And this is often called Forest School because it is outside and probably takes in lighting a fire and some of the so-called 'bushcraft' skills. The reasons I have outlined in this chapter for this 'lite' version of Forest School are many and no doubt are being replicated in other countries where resources, educator confidence and a clash with outcome based curricular are key factors in this more limited provision.

What is missing for me, apart from support and acknowledgement from decision makers both locally and nationally, is the greater emphasis on how this regular contact and connection with local green biodiverse rich places is not necessarily resulting in quick enough lifestyle change on a societal level to repair broken ecological systems and broken human systems. Having visited many Forest School settings around the country over the years..and this is in the hundreds, I still see, generally, a basic lack of 'real' understanding of how separate we are from the natural world

and ecological systems, plus the grief at the loss of species and changes in ecological processes supporting life. It takes a courageous and deeply felt 'ecological' Forest School practitioner to be able to bring to the fore the ecological collapse we are facing when the tenet of the Forest School movement is healthy holistic development and celebration of the nature contact and connection made in the woods and trees. While I have always espoused the deep connection and delight in relationship building with the more than human in a human-centred created community in the trees there comes a point where these rich playful connections need to shine a light on the grief and understanding of the current planetary crisis. Where better to share these insights and cracks in our life support systems, and important pivotal ecological understandings than around the fire while listening to the dwindling populations of songbirds. I will finish with this question…At what point in this journey of regular contact should that 'crack' be opened?

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Chapter 11
Long Before, Before, Within and Around, After, and Long After the Program: Using Environmental Socialization Strategies to Amplify Programming Effects

J. Joy James and Robert D. Bixler

11.1 Introduction

Environmental socialization which embraces environmental education is the "long game" approach to nurturing interest, caring and concern for wild places and our environment.

An environmental socialization programming strategy makes explicit the often-unrecognized differences in informal experiences between the environmental person and some otherwise near-identical person who embraces other interests. Outdoor environmental educators are sometimes surprised and puzzled by the discomfort, fear and even disgust expressed by some program participants, particularly when the program serves persons who did not self-select to take part in the program such as a portion of-school students who would otherwise never visit a park or nature center on their own. These differences do not stem from lack of education, rather from a lack of frequent, recurring and expanding informal experiences with nature and limited interactions with persons who appreciate and value nature. During more rural periods in human history, some of these informal socialization experiences with nature occurred without intention or even much awareness. Explicit descriptions of these environmental socialization phenomena followed by mimicking them allows outdoor environmental educators to make sure these influences happen intentionally within and between outdoor environmental education programs.

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_11

11.2 Aversion to Wild Nature

While there are volumes of research on the benefits of experiences with nature (Kaplan & Kaplan, 1989; Franco et al., 2017), only a few studies have investigated negative evaluations to being in wild nature (Bixler et al., 1994, 1995). Part of this imbalance in research is ideological, but there is also little recognition of this issue as persons who are averse to nature simply choose not to visit parks and nature centers, and consequently are rarely observed. Negative perceptions of nature minimally involve fear of becoming lost, fear of dangerous plants and animals, disgust reactions, fear of the dark, and discomfort from heat and cold (Bixler & Floyd, 1997, 1999). Particularly with school groups where mandatory attendance guarantees the presence of at least a few program participants who are averse to nature, there are opportunities within outdoor environmental education programs to reduce negative perceptions of wild nature. Negative perceptions of nature can be addressed within outdoor environmental education programs with instruction and social modeling. Additionally, encouraging an empowering frequent, recurring and expanding outdoor play and wildland recreation outside of and beyond outdoor environmental education programming seems essential (James et al., 2010).

Wayfinding is the ability to find one's way into and back out of an environment in a predictable amount of time (Jonsson, 2002). Many children who are driven or led to everywhere by parents and/or ride a bus to school do not readily develop strong wayfinding skills (Ecuyer-Dab & Robert, 2004). For instance, children who receive bicycles earlier in life tend to be better wayfinders. Poverty is also predictive of a limited home range and poorly developed wayfinding skills (Matthews, 1987; Spilsbury, 2005). Research has long ago tied self-directed childhood wayfinding experiences to higher performance in spatial reasoning (e.g. geometry) in school (Spencer & Easterbrook, 1985; Matthews, 1986). Providing opportunities for children to practice wayfinding skills within outdoor environmental education programs is easily justified. Every child should know how much time it takes to walk a mile/kilometer, how to use routes, nodes and landmarks and to rotate a map into alignment with the paths in the park before making wayfinding decisions. In contrast, 'wayshowing' is the leading of groups through a natural area, a strategy that does little to develop wayfinding skills (Mollerup, 2013).

Fears of animals and plants are common. Some fears are legitimate, but others are based in a lack of direct recurring experiences with wild nature leading to inaccurate expectations of encountering non-existent threats. These negative attitudes are acquired from media and naïve social acquaintances. Both horror movies and educational nature television can create inaccurate expectations within a person with limited experiences in local wild nature. For instance, geographically naïve school children often express fears of large dangerous animals that are only found

in distant countries. A person is well positioned to be comfortable in wild places when their expectation of encountering feared objects is reasonable (termed fear expectancy (Bixler & Floyd, 1997). A person who is highly fearful of encountering crocodiles but knows they are not present in most of the temperate world, will not avoid outdoor activities in wild places in North America. Helping people develop reasonable fear expectancy can be integrated into outdoor environmental education programs through instruction, social modeling, repeated experiences, and informal conversations.

Disgust reactions are similar to fear in that disgust is a basic negative emotion. Development of the degree of sensitivity to disgust is partially linked to the intensity of the negative reactions parents make to the odor of their infant's bowel movements, yet visual and tactile cues can also evoke disgust. Some natural objects like spiders can evoke both fear and disgust reactions. Dirtiness of mud and soil, sliminess of algae and mucus coatings of some amphibians and invertebrates, and creeping/crawling motions of many small invertebrates evoke disgust reactions. Smells reminiscent of sewage often experienced in "swamp stomp" activities and rotting substances may also produce these reactions. Social modeling and habituation can help clients reduce and rationalize their disgust responses to some natural elements. For children who play in wild places frequently, experiences with disgusting objects are often perceived as normal if not a source of curiosity (Bixler & Floyd, 1999).

Comfort outdoors can be a constraint on many types of outdoor activities. Thermal comfort (too hot or cold) in the outdoors requires knowledge of appropriate dress but also frequent experiences in varied types of weather. People who live in colder climates become uncomfortably hot at lower temperatures than those who live in warmer temperatures. Construction workers (and tobacco smokers who take outdoor smoke breaks year-round) are comfortable in a much larger range of temperatures than office workers. Teaching layering and proper dress for outdoor activities is critical, but developing comfort outdoors is a habituation process from frequent participation in play and outdoor recreation activities across seasons (Chen & Ng, 2012; de Dear & Brager, 1998; Wohlwill, 1975; Helson, 1964).

For human eyes to adjust to darkness, requires 15–30 min. Fear of the dark is common as most people are rarely in the dark for more than the few moments it takes after exiting home to reaching their car or cab. Street lights in urban areas guarantee that many urban dwellers well into adulthood have never seen the stars in the night sky. Some natural sounds are mostly heard at night and their sources are more difficult to see. Is that pitter patter sound in the woods at night dew falling off the leaves of trees or a pack of wild dogs quietly stalking their next victim?

11.3 Significant Life Experiences

Among nature center directors, there is an often-repeated account of several of them standing around at a conference describing to each other how their life work emerged around promoting nature and natural history. None described school experiences, rather frequent playing and recreating in woods, beaches, streams and creeks as children. After much recounting of fort building, hours spent turning over rocks in creeks, catching bugs in jars, pet snakes and a dozen other similar events, one of the directors asked the others how many of them allowed these types of activities at their nature center. An uncomfortable silence followed the question. This was a moment of revelation for these directors. Today, many community and regional nature centers provide large (10+ wooded acres) children's nature play areas plus preschools in the style of European forest schools. These are environmental socialization strategies, at least for younger children. But environmental socialization must continue across all of a person's life stages.

In 1980, Thomas Tanner published a seminal research paper that documented the significant life experiences recalled by natural resource professionals. The results were provocative in that playing in wild and semi-wild nature as a child was the single major formative life experience reported by a large majority of research participants. Since then, his study has been replicated numerous times with multiple research methods and in numerous countries (Chawla, 1998; Ewert et al., 2005; Martin et al., 2020; Sugiyama et al., 2021). The findings of all these studies were dramatically consistent documenting that environmental educators in many regions of the world attribute their passion for their work with nature to (self-directed) childhood play experiences in wild places plus several less frequently mentioned influences later in life.

Yet researchers made one significant error in interpreting the data from these studies. Childhood play is the single most common experience reported, not because other later experiences were less important, rather it is the only readily available experience for children. Younger children cannot hold jobs, travel on their own, take advanced biology in high school, be camp counselors, or go to university. As a person leaves childhood and moves through their teen years and into adulthood, there are more varied ways to experience and interact with nature than just play. Consequently, any one type of post-childhood play experiences is not as commonly reported simply because there are more types of them. These varied and less commonly reported experiences seem less important unless one recognizes that they are largely interchangeable as they serve similar functions. Anyone of these experiences continues a person's socialization, but few people reported participating in all of the types of these experiences. Regardless, all these research projects document that adult conservationists recall many and varied frequent, recurring and expanding formal and informal experiences with (wild) nature growing up through young adulthood. A few of these studies used comparison groups of persons disinterested in nature and the environment who, as expected, did not report the same pattern of socialization experiences.

11.4 Environmental Socialization—What Is It and Known Components

Even today, many environmental educators still cannot articulate how their life experiences differ from their disinterested counterparts. This is partly due to self-selection effects through which like-minded people gravitate to parks, nature centers and other environmental organizations while others avoid these locations. The Significant Life Experience (SLE) research provided one broad explanation for the puzzling differences in degrees of interest in the environment between otherwise quite similar persons. Environmental socialization research appeared later with the purpose of identifying and describing specific actionable steps across life stages that should increase the opportunity for a person to develop a lasting interest and relationship to nature and the environment. Few outdoor environmental education programs interact with a single person from early childhood into adulthood. Yet, by embracing environmental socialization strategies and watching for opportunities to act, an environmental educator can easily increase the frequency and variety of experiences that people they interact with have with nature during and after their programs.

Environmental socialization strategies make explicit what has largely been a little recognized socialization process such that these processes can be explicitly mimicked. Several broad categories of strategies accompanied by specific articulable actions have been identified. Some of these actions can be integrated into environmental education programs either in the curriculum or through restructuring the dimensions of environmental education (longer length, adding overnight experiences, more diverse offerings, etc). Other actions involve steering program participants to other activities after a program is over and recognizing unplanned for opportunities when they arise. Some of these actions take a few seconds or minutes.

Comfort outdoors is a chronic and difficult issue to address as modern living shields us from environmental irritants and thermal extremes. Heating and air conditioning mean little exposure to extremes of temperature and limited interactions with (some) insects and other irritants. Likewise, pest insects that persistently seek humans out for food, are a convincing force for staying inside. Habituation is the rather automatic adjustment of the human nervous system to high and low levels of a stimulus. Humans are not constantly and rationally thinking about whether they are hot or cold, the autonomic nervous system simply creates unpleasant arousal when a low or high threshold is reached. This is true to a degree with smells, biting and hovering insect, sweat and dirtiness. Having a wide comfort range is largely a function of repeated experiences in wild nature across seasons and life stages. Frequent childhood play in wild or semi-wild settings is the starting point. This issue cannot be addressed solely within the boundaries of discreet outdoor environmental education programs. Fortunately, children seem to prefer wild settings when they have access to them as they provide a degree of privacy and a greater number of behaviors have

fewer negative consequences (e.g. dropping chocolate cake on the rug in the living room versus on the ground).

Competency in wild places leads to comfort in wild places and increased tendency to repeatedly participate in wildland activities on one's own. Not only must the primary skills associated with an outdoor recreation activity be mastered, but use of wild places requires mastery of ancillary (support) skills. For instance, comfort and interest in canoeing and kayaking increases when the paddler knows how to swim (Bixler & Morris, 2000; Bixler & Powell, 2003). Yet many programs that expose youth to paddle sports fail to take into account developing swimming competencies. Hiking in a park is anxiety producing if one does not have well developed wayfinding skills. Likewise, without much experience walking on unimproved trails, usually gained during childhood play in wild places, hikers will become mentally fatigued simply looking for roots and rocks in the trail surface that they could trip over. Consequently, less mental resources are available for enjoying and observing natural phenomena, making any hike less rewarding and less likely to be repeated. Rapidly and semiconsciously perceiving/recognizing the threat potential of partially hidden natural objects (e.g. are those two ears or two leaves sticking up from behind a boulder?) requires many experiences outdoors and much of the learning is implicit, without awareness. Again, competency and comfort come partially from repeated and expanding experiences outdoors plus instruction and also requires learning ancillary skills. Without these competencies, outdoor activity remains intimidating and frequent experiences are unlikely. From teen years to early adulthood, the mastery of some outdoor recreation activities is ancillary to adult educational and then vocational achievement. Along with comfort outdoors, camping and outdoor recreation skills from camping, boating, to rock climbing can and often and do play a role in employment in field biology and geology, behavioral ecology, and natural resources work.

Supportive social relationships based around nature and the environment are axiomatic to the environmental socialization process. Childhood play in natural places is disproportionately due to parents being at least willing to live near natural areas, and tolerate their children playing there, coming home dirty and bug bitten. Rewarding child-child relationships during these play periods may focus on exploring and discovery of nature (play with nature) or play with each other in nature (James et al., 2010). Later parents, a neighbor, somewhat older children or peers informally introduce children to different wild areas through travel and youth programming like summer camps. Some school teachers will have an avid interest in nature and captivatingly address nature within their classroom. These same teachers will seek out outdoor environmental education programs for their field trips over other options. These same teachers on their own or with encouragement from environmental educators, may be able to help students they have identified as intrigued with nature to find experiences outside of school.

At community and organizational levels, social support comes in the form of sharing opportunities within and among organizations in the region. Volunteers,

interns, and entry-level employees should be viewed as both producers and products of outdoor environmental education. In most cases, interns leaving an organization should have help with career planning, additional professional development and their next placement lined up even if it may not be a permanent job. Volunteer and staff training and development should be viewed as fostering growth in these persons, not just enhancing their skills to provide better services for others. Within a region, consortiums should be formed to further develop skills of all environmental professionals across organizations. These same consortiums should play a role in making sure that environmental educators know all the varied possibilities in the area for further engaging the emerging environmental persons who they instruct.

Identity formation around nature and the environment is part of the environmental socialization process and evidence of a maturing outcome for emerging adults. Like attitudes, identities are shortcuts for rapid, efficient, narrowing, and often shallow decision making and social signaling. Golfers, an identity, go golfing on weekends without considering many if any other options. Since environmental socialization requires frequent, recurring and expanding experiences with nature often with a support social group, environmentally oriented identity formation is a potent tool in motivating these outcomes. The formation of any number of relevant identities is evident in self-labeling and social labeling by others. Evidence of identity formation also includes specialized clothing, relevant equipment ownership, and the use of domain-specific vocabularies. These observable characteristics in one person make for efficient identification by other people with shared identities. Identities around nature and the environment that are evident increase the chance of the development of unplanned spontaneous encounters, new friendships and other activities such as memberships in environmental organizations. Outdoor environmental educators should label themselves and others with identity labels, provide insight and opportunities for clients to acquire clothing and equipment, teach specialized vocabulary and help clients find and join groups relevant to their emerging identities.

11.5 Specific Environmental Socialization Strategies

Environmental Socialization investigates how people become comfortable in outdoor settings, develop knowledge and skills in informal and formal settings, and robust identities related to nature and the environment. Environmental socialization strategies are implemented by outdoor environmental educators within and between programs. Frequent, recurring and expanding experiences with nature requires that learners have access to nearby nature, along with occasional opportunities for more distance experiences through field trips, summer camps, parks and refugees, nature centers, biological field stations, forest schools, folk schools, vacations, and more.

When a person is attracted to being in one of these settings and acts, both expected and unexpected opportunities arise for educators to match environmental socialization interventions to the learner.

Bixler et al. (2011) identified five domains of Environmental Socialization incidents or affordances that could be interventions in formal and non-formal settings. Some of these interventions can be planned for and reliably implemented across many programs while others will be coincidental:

1. Access to Natural Environments – "Access to natural environments encompasses mechanisms that create opportunities for children, youth, and emerging adults to have access to and interact with interstitial, semi-wild, and wild environments." (p.41)

   (a) Environmental Access—Proximity to natural areas including interstitial nature in urban areas that are not readily recognized as affording experiences.
   (b) Environmental Strategy—a plan for obtaining new or additional formal or informal experiences with nature. Spontaneous or facilitated by environmental educator. Should become a habit.
   (c) Content of Environmental Play—childhood play in nature is more valuable when it involves observing, catching, collecting, and experimenting with natural phenomena.
   (d) Environmental Norms—positive beliefs about getting dirty or handling natural objects (or litter in nature) that are less than pristine.

2. Social Support – Children who live near woods often play there partly because their parents perceive such activity as appropriate. After childhood, peers, camp counselors, teachers, park rangers, and professors play an increasingly important role in recognizing people's abilities, supporting, interpreting, and guiding their further discoveries, opportunities, and choices. Frequent and long-term participation in nature activities reinforces, renews and expands interests." (p.44)

   (a) Environmental Encounters—unplanned encounters with like-minded environmentally-oriented persons.
   (b) Mutually Enthusiastic Relationships—ongoing nonjudgmental enthusiastic relationships between persons of any age around an interest in nature.
   (c) Environmental Sponsorship—purposefully involving/inviting someone else to a program that provides direct or indirect environmental experiences.
   (d) Environmental Organization—Membership or involvement with an environmental-based organization. Sometimes this begins tying a love of nature to action to conserve nature.
   (e) Reverential Role Model—A highly talented and visible person who attracts the attention of an environmentally developing person. Out of awe, this person becomes a reference for the developing person for skills, avocations, vocations and ways of thinking to develop.

3. Development of Environmental Competencies – "The ability to enjoy natural environments requires developing a range of largely unrecognized ancillary skills and activities." (p.47)

   (a) Environmental Introduction—First sets of experiences with nature through play, recreation or activity.
   (b) Environmental Learning—the process of acquiring socio-physical skills or knowledge of natural environments.
   (c) Environmental Searching/Observant—Intrinsic interest in actively looking, smelling, feeling, tasting, or listening for natural objects in the environment.
   (d) Learning Wildland Recreation Activities—Learning safety and skills needed to carry out a range of wildland recreation activities that support nature appreciation activities.
   (e) Environmental Cataloging—Systematic collecting and/or naming of plants and animals as a basis for direct experience with biodiversity.
   (f) Tolerance for Bad Weather—Knowing coping mechanisms for spending time outdoors in inclement weather so as to increase the number of experiences over time.

4. Accumulation of Environmental Experiences – "Frequent experiences in wild places heightens understanding of these places both perceptually and intellectually, and results in habituation to environmental irritants." (p.53)

   (a) Environmental Extension—Further developing an existing nature skills to a greater depth.
   (b) Environmental Expansion—Addition of new activities that complement existing nature interests.
   (c) Environmental Continuity/Substitute—Continued interest in involvement with nature despite a disruption in geographic location or life course.
   (d) Environmental Invitations—Peer parent, colleague, or organization extending an invitation to someone else to participate in an environmental opportunity.

5. Environmental Identity Formation – "Persons begin to view themselves as environmentally oriented as they develop a robust set of environmental competencies, preferences and values. (p.57)

   (a) Environmental Crystallization/Identity—The point in time that a person realizes that one of their social identities is or will be something environmental. A product of many experiences and at least one self-evaluative "AHA" moment
   (b) Environmental Occupation—volunteer or paid positions with environmental foci.
   (c) Environmental Decision Points—a time in a person's life where they must move toward or away from an environmental role.
   (d) Unusual Interests—Management of social identity due to unusual interests that bring like-minded people together but also result in out-group derogation.

The five domains were identified by the authors through the examination of life histories of avid natural history enthusiasts, whose lives occurred before the rise of the internet and social media and smart phones and accompanying apps. A sixth domain termed Environmental Digital Media might be appropriate, although much of these activities can be subsumed in the original five domains.

The five domains and specific incidences are further discussed in Bixler et al. (2011). To some extent, an outdoor environmental educator can reduce the list to frequent, recurring and expanding experiences within a supportive social network across the life stages. Any action that extends or evolves the current experiences for any reason falls under the environmental socialization umbrella.

11.6 Vignette: A Week in the Life of a Nature Center Educator Working with an Environmental Socializer Strategic Philosophy[1]

On Monday, Susie "Ladybug" Heustis, unlocks her office door adorned with nature-oriented stickers, emblems and patches (5d). She first checks the Nature Center's social media and then upload photos from the weekend programs illustrating a variety of people doing nature-dependent activities (2a,b).

Over the weekend, the nature center received several new memberships. The recently revised membership forms requests members to report what nature topics interest them. Taking a look at the week's scheduled events, she searches her membership database for persons who have expressed interest in these programs and sends them a personalized email invitation to the program. One of the programs is advanced mushroom identification. She pulls up the registration information from the last 5 years of beginning mushroom identification and sends the enrollees an invitation to the advanced class.

Glancing around her office at all the nature art, crafts and field biology equipment she has purposefully "stored" out in the open as conversation starters, she notes to herself that yet again she has failed to get a basketball with the banana slug logo from University of California Santa Cruz on it. Even jocks can be interested in nature if given a reason (2a).

The rest of the day is spent roving around the grounds of the nature center interacting with guests. Ladybug comes across a person looking frustrated while trying to read a map to get to the trails. She smiles and helps him align the map with the park's trails so that they can figure out which direction to turn (3b). The look of revelation on his face as to the usefulness of orienting the map tells all. She is reminded that the school field trip leaders need to do less 'wayshowing' and more wayfinding skill development with school field trips. Maybe putting a

[1] Codes within the text reference the domains above.

student in each group in charge of leading the group back to the buses at the end of their pond study lab might help with the wayfinding skills deficit she keeps observing (3d).

Ladybug has a big planning day on Tuesday. Before getting to her office she is stopped by yet another guest wanting to know about yellow flowers blooming in perfusion along the roadsides. Ladybug shares bits of information about the flowers. She then pulls out her ever-present notepad and pencil and writes down the flower's name for the guest, suggesting that he can find more information on the internet (and to stick the paper in his wallet) (3a; 4a,b).

The Nature Center's Star Hopping Astronomy program has been wildly successful because it makes the night sky so simple. Her calendar reminds her that it is time to mail out one of the bimonthly star-hop post cards. At the end of the program each participant gets a "Look up in the sky tonight" bumper sticker as they leave the program with a suggestion to put it on their trash/recycling bin which is often taken out to the street in the evenings. Six season-appropriate constellation-diagram star hop postcards are sent out every 2 months to encourage previous Star Hoping program participants to continue looking up in the night sky (3c,e; 4a,c).

Knowing that the Center's Spring-season intern will be leaving in a month, Susie meets over lunch with him to find out about his career trajectory. After hearing from the intern that he wants to develop his public programming skills while having mostly provided school field trips during her internship, Ladybug has a suggestion: Why not join a work study program at a Folk School where the intern could take skill-based courses that integrate nature topics/themes with the arts/crafts and the humanities? Those topics and skills could later become adult workshops at just about any nature center. (1b, 2b,c,d; 4b,c,d; 5b).

In the afternoon, Ladybug has a team meeting with her boss, the marketing and gift shop manager about this year's theme "Bugs are Cool."(1d; 3a,b,c,e; 4a,b) In this discussion, she shares an interesting pricing idea for one of the programs –pay $6 if you just want to attend the program or $26 to participate in the program and take home a quality insect net. (4c) For a moment she dreamily imagines a world where a butterfly net sits in the corner next to baseball bat in the bedrooms of children all over the world. Then she strategizes with the gift shop manager about what items would complement her planned programs for the "Bugs are Cool" theme. (4c, 5d).

Wednesday begins with Ladybug reviewing maps to find nearby wooded areas/parks by the urban school for her program. The kids travel almost 45 min from their school to the nature center. Why not do field trips in the nearby parks that are practically in walking distance from the school? (1a) She schemes that some of the kids might just use those parks more after the field trip and be more observant in a "naturalist-sort-of-way" if field trips were held in these pocket parks.(1b,c; 3a,b,c).

This reminds her that she needs to get emails off to her most nature-enthusiast school teachers asking them to nominate kids in their classes from limited income for scholarships for the nature center's summer camp. (2c; 3d,f; 4c,d).

While heading out to lunch she sees Susan who loves reptiles and notices Chris also a reptile lover approaching from different directions. What a coincidence! She introduces Susan to Chris suggesting they might enjoy going to the reptile show at the fairgrounds this weekend. (2a) Ladybug walks off smiling to herself that she may be getting a wedding invitation in a year or so, as the two soon-to-be lovebirds enthusiastically start to get to know each other. (2b).

No one is free from Ladybug's initiatives. Many of the visitors to the nature center use it to get regular exercise but mostly just because it is close to home. Some of these folks visit three times a week for around 150 visits a year. Ladybug has talked dozens of these walkers to look for box turtles and take photos with their smart phones of the heads of the turtles when they encounter one on the trail. Since each turtle has a unique scale arrangement, the photos can be used to identify individual turtles. The walkers seemed willing to tolerate and help out this strange turtle-obsessed nature-nerd-of-a-women with photos (2e; 5d). Yet, some of this exercise crowd has gotten interested in these turtles and created a social networking group to share, discuss, and even name the turtles as they find and photograph and re-photograph them. (2b; 3a,c,e; 5a).

Ladybug is lucky to have Beaver Tail Bob as one of her field instructors but he is also a wiz at web pages. He sticks his head into her office and announces that a pileated woodpecker has practically blown apart a rotten log along the side of the main trail looking for grubs. Splintered wood is strewn all over the ground. He suggests a QR code sign that will take any smart phone-owning hiker to a web page he has made up about these crow-sized woodpeckers and the signs they leave. Ladybug loves his idea to replace those static interpretive signs that hikers maybe read once and then ignore forever with these ever changing series of QR codes on a stick that allow the interpretation of ephemeral nature. She is confident she can turn every one of those exercise-oriented hikers into field naturalists. (3a,b,c,e).

Friday morning is the quarterly gathering of program and public relations staff for the upstate region. Ladybug will be sure to let everyone know what is happening at her nature center and find out what others are doing. She often finds novel training opportunities for her staff and volunteers offered by other area organizations (2b; 4b,d). The consortium is setting up a web page for residents of the area as a one stop listing of all nature and environmental locations, activities, programs, workshops, gatherings being offered in the region at any one time (2c,d; 4b,d). Hooray!

11.7 Challenges

Environmental socialization strategies whose application can be viewed as educational affordances, are easily understood and applied by outdoor environmental educators. Educators must be diligent in recognizing opportunities. While the strategies are presented here in a mechanistic format, the actual quality of the

experiences can be quite idiosyncratic and not as predictable as learning outcomes typically associated with education. Participants make their own meanings depending on their previous experiences and who is present at that moment. The desired outcomes of these spaced over time activities (Bahrick et al., 1993; Vlach & Sandhofer, 2012) are emotionally rewarding (e.g. fun, intrigue, fascination, accomplishment) generating intrigue and affection for nature accompanied by socially rewarding relationships. Outdoor environmental educators must facilitate at least some of these experiences with faith that other educators will do similar work several months of years later with the same participants.

11.8 Conclusion

The difference between two seemingly identical persons who have both had similar formal environmental education experiences, one who values nature and the environment, the other ambivalent is simple. The first person has had a long-term, social-emotional relationship with nature. Given the opportunity through outdoor environmental education to further observe, learn and experience, they are eager, animated participants. Love of nature creates strong motivation to learn about nature. People care for and protect the things they love. Environmental socialization creates the love, environmental education teaches ways to understand and protect what is loved.

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Chapter 12
Wild Pedagogies, Outdoor Education, and the Educational Imagination

Bob Jickling, Marcus Morse, and Sean Blenkinsop

12.1 Introduction

We are living in times of ecological precarity. The Earth is stressed in ways humans have never before witnessed, and there is no adequate language to describe the epochal scope of the coming change. Terms such as Anthropocene, Capitalocene, Chthulucene, and more, circle the linguistic terrain but do not quite capture the scale of Earth's shifting geostory (Latour, 2014). Perhaps that is our first anthropocentric mistake—to think we can capture this change in our own words, let alone shift the trajectory of the crisis at hand. It is more likely that we cannot control this phenomenon, that Earth is even writing the script, and that "modern" humans, for the most part, are not listening. Yet one thing seems clear, the future is uncertain.

Education is often invoked as a way out of crises, yet this can be fraught. Current western modes of education are pervasive in their rational, measurable and neoliberal driving forces—and operate at a scale that makes them seemingly impenetrable to change. Bauman (2005), for example, is doubtful that attempting change by deploying the right kind of skills, attitudes, and behaviours in education can ever be

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_12

effective, and insightfully asks whether educators attempting such approaches will ever really be able to "avoid being enlisted in the services of the self-same pressures they are meant to defy" (p. 12). In the end, such attempts seem unavoidably to bend back in the direction of the status quo, and business as usual. Those who have been following environmental education and allied fields will recognize that this field of study has by and large retained much of the same formulation that Bauman critiques (Humphreys et al., 2022; Bokova, 2016). And, this formulation can be traced to the Tbilisi Declaration's blueprint for environmental education authored in 1977. How far have we come? What holds us back?

These observations concern us and have driven the development of what we call *Wild Pedagogies*. A new geostory is being written and we humans—particularly those of us ensnared in modernist, globalized, westernized, euro-centric, neo-liberal, colonial, Cartesian, and/or anthropocentric narratives—have barely begun to listen (Latour, 2014). And the collective intellectual legacy of this resulting entanglement has left us with limited paths for knowing and being in the world, a narrow sense of cognitive rationality,[1] and an oversized sense of control.

12.2 Wild Pedagogies

Wild pedagogies are inspired by *wildness*. That is, they represent a desire to let go of an overabundant sense of control, to invite places we visit to become an integral part of our work. As such, wild pedagogies rests on the premise that an important part of education can include intentional activities that provide a fertile field for personal and purposeful experience without controlling the environment and its actors, learners, or educational outcomes. Responding to the crises of our times will require a radical re-imagining of ways of being human, as co-inhabitants of this planet. Thus, reimagined ways of teaching and learning will necessarily run counter to dominant cultural narratives that assert that the world is knowable, predictable, and subject to primarily human use and control. Educational responses can no longer assume that current "business as usual" models will offer effective guidance in a rapidly changing world and an unknowable future.

In problematizing control, we seek to challenge existing assumptions, to rethink possibilities, to push open the doors to educational opportunities, to expose the limits imposed upon epistemology, and to embrace the learning opportunities arising from being present in the more-than-human world. We have previously described philosophical framework and touchstones for practice of Wild Pedagogies (Jickling et al., 2018; Blenkinsop et al., 2018; Morse et al., 2021). Rather than restate this work, we take this opportunity to push further, and to ask—in what ways might

[1] For critiques of contemporary conceptions of rationality (see for example Arne Næss, 2002) and Val Plumwood (1993).

outdoor educators be uniquely placed to contribute to this wild pedagogical project? This question relates not only to reconsidering one's own practice, but also the possibility for outdoor educators to speak back toward the educational project more broadly.

This is not to say that there are not already many incredible teachers—across a variety of educational settings—pushing limits, defying the status quo, and persisting in offering rebellious alternatives (Blenkinsop & Morse, 2017). There are. And, we believe that there is an important place for outdoor educators in this mix. After all, outdoor educators literally work "outside" of mainstream educational classrooms. We argue that this context can enable them to view the larger educational system at some distance. It can also provide them with a basis for imaginative contributions that go to the heart of conversations about the future of education writ large.

But first we will consider just how deeply education appears to be culturally entrenched.

12.3 Problems in Education

Recently, the journal Educational Philosophy and Theory (2022) published a special issue that expressed doubt education's capacity to respond to the environmental crises, at all (Moran & Kendall, 2009). The editors are forthright in their misgivings and openly ponder the possibility that educational research produces no more than illusions of influencing education (Pedersen et al., 2022). They wonder if these illusions are mere simulations of education. They also wonder if we may just be deluding ourselves when we believe that our research produces "improvement agendas" which we then pursue as if they were possible. Put another way, are we just going forward—left foot, right foot—but not getting anywhere? Are schools and universities servants to a globalizing economy? Is the educational apparatus impenetrable? Is there no space between schooling and the status quo?

Social and cultural change through education is difficult work. Cultural assumptions are often hidden from view in pervasive language choices, hierarchical social structures, the scope of knowledge and understanding, and a guise of neutrality. These assumptions silently work to bend educators back to the status quo. Indeed, these forces can be the *real authorities* in a culture. How, then, might we meet these challenges and enable productive and hopeful pedagogies? Part of this task must involve naming the challenges and offering alternative responses. In the following sections we describe two key challenges for enacting the radical change proposed. First, change requires more than just tinkering at the edges; education more broadly must change. Second, educators, researchers, parents, and students require an expanded imaginative capacity to enable such change.

We suggest that there is far more for outdoor educators to do than simply run field trips at the edges of these concerns. Many outdoor educators are well equipped to offer educational understanding that reach far beyond their own practices and fields of expertise.

12.3.1 A Call for More Radical Change

People closer to the ground know that education is, in many cases, failing to deliver; and they are voting with their feet. For example, referendums held in January 2022 led seven school communities in Canada's Yukon to leave the Yukon's Department of Education and to join a new Yukon First Nations School Board. In essence, they voted to ditch the centralized colonial control of the Yukon's education system. Education, to them, was seemingly oblivious to, or even knowingly complicit in, the devastating consequences for their communities (Yukon First Nation Education Directorate, https://www.yfned.ca/fnsb. And alarmingly, public education did not seem to have either the will or the ability to change (Auditor general of Canada, 2019).

Interestingly, it wasn't just citizens of First Nations who voted for change. The Yukon First Nations School Board reached out to offer improved educational outcomes for all Yukon students. In turn, many other community members supported this move away from centralized control of education. Indeed, there is widespread dissatisfaction with the Yukon's Department of education and its inability to enact meaningful change that responds effectively to education needs in this the Yukon. (Pers. Comm., Ted Hupé. President, The *Yukon Association* of Educational Professionals, April 6, 2022).

This new Yukon First Nations School Board is just one concrete example of disillusionment with mainstream education. However, it is particularly interesting in the context of this chapter. First, there is a consistent message amongst First Nations leaders and Elders that education must get back to the land. Therein is an acknowledgment that humans are physical beings who learn through their bodies, and their senses. And the land has something significant to offer. In this way the world is a real place whereas abstract conceptualizations in classrooms are wordy simulations of these places. Le Guin (2016) captures the perils of this move away from land and towards words:

> We become so enamoured of our language and its ability to describe the world that we create a false and irresponsible separation. We use language as a device for distancing. Somebody who is genuinely living in their ecosystem wouldn't have a word for it. They'd just call it the world. (p. 106-107)

In this vein, First Nations people just call it *the land*. Elders in the Yukon already know that traditional ways of knowing, being, and doing require learning on the land. And that learning on the land is good for all children.

Second, Yukon First Nations are insistent that current education does not reflect their worldview and without this, mainstream education will always be inadequate. They insist that learning must embrace two worldviews—a task that inherently

requires education to migrate back to the land. We understand that this is a brief description of complex ideas and processes that will require much more discussion over time and that the task at hand is not to appropriate another's culture. Thus, we are foregrounding ideas that need considering if we who inhabit educational systems are going grapple with change.

This example makes clear that substantive ecologically and socially just change will need to be radical—it will challenge some of the most fundamental tenants of western worldviews. We cannot just think differently, we must inhabit the world in different ways. It may even require learning to see ourselves as co-inhabitants that can listen to the Earthly languages around us and to embrace nature as our co-teacher (Blenkinsop & Beeman, 2010).

Many outdoor educators may identify with threads that run through this section. First, by taking learners outside outdoor educators are already parting with most of mainstream education. They are already beginning to disrupt the status quo. Second, they acknowledge that humans are physical beings and that learning through whole bodies in real places is important. Third, they know that when taking groups outside the experience isn't always knowable, predictable, and that they will need to adapt. And fourth, the more-than human world is filled with knowledge, agency, and capacity to teach. We propose that these predispositions of outdoor educators and their pedagogical skills are some of the tools required for wilder pedagogies.

12.3.2 The Need for an Expanded Educational Imagination

To understand the role imagination plays in creating innovative schools and practices, we draw from a radical public "school" in British Columbia (Blenkinsop et al., 2018). The Maple Ridge Environmental School Project opened in September 2011 (see; Chap. 15 for more information). And this project questions foundational assumptions connected to the idea of school. Specifically, this school has no buildings, sees nature as an active part of teaching, and understands cultural change as part of its mandate. All learning happens outdoors and there is an active process of questioning every component of schooling.

Researchers at the Maple Ridge project identified four ways, explicit and implicit, that policy can hinder innovation (Blenkinsop et al., 2018). The most relevant for this discussion was "self-limited imagination." The emergence of self-limited imagination was a surprise. Although, once named, its presence became visible in many places. Self-limited imagination is not a case of something that has been thought of before, but ignored. Nor is it something that is deemed impossible. Rather, it was about alternatives not being imaginable at all! It was about participants not having the experiential materials, flexibility, institutional permission, and/or the cultural range to bring an idea into consciousness. It was about imaginative limits, and how limits are problematic if you are trying to move outside the culture within which you are doing your imagining. When something beyond these imaginary boundaries was offered to participants in this project, the response was often a blankness, or a

comment such as “I have never even thought of that….” So, if one accepts that imagination is limited, possibly by culture, how might we expand our own imaginations and those of our charges?

The idea of a self-limited imagination is striking. When not addressed, it stands to thwart far-reaching, or radical, innovation—and indeed to obstruct wild pedagogies. Blenkinsop et al. (2018) offer an example from the Maple Ridge Environmental School Project where it becomes clear that imaginative limits are also contained within social and cultural systems. Perhaps, imaginative capacity is not so much self-limited as it is culturally bounded.

While it is true that imaginative capacity will always be limited, maybe there are ways to expand its range. Such moves require a number of dispositions: a willingness to change; an active gathering of ideas about how to be differently in the world, within, and beyond one’s cultural reality; a constant expanding of available tools; a consideration of the stories, metaphors, and languages being used; and an intentional engagement in a diversifying range of experiences. The last consideration is aimed at the thoughtful development of the “stuff” that expands imagination—ideas, concepts, experiences, and encounters. It is the stuff that enables educators to consider limitations within their cultural context and then offer wilder possibilities for expanding their students’ imaginative potential.

Many teachers, parents, and students today are responding to the perceived incompleteness of an educational project built more than a century ago. They are also responding to globalization and environmental degradation by seeking alternatives to the mainstream educational systems. We believe the field of outdoor environmental education can thoughtfully and effectively respond to this demand in important ways.

12.4 Pedagogical Understandings of the Outdoor Educator

Outdoor educators often have unique pedagogical understandings that allow them to work effectively in responding to the current ecological crisis (Blenkinsop et al., 2016). But more than that, we are suggesting that these understandings may be urgently required across education more broadly. In other words, outdoor educators have an opportunity to consider their responsibility to speak back to mainstream education—to contribute toward the more radical changes required. In the following section, we highlight three key understandings that many outdoor educators will be familiar with, (1) An ecological, land, and body-based understanding of what knowledge might be, (2) an ability to work with risk and uncertainty, and (3) experience working with identity transformation. We believe that by flexing these understandings, imaginative possibilities can emerge.

12.4.1 Broadening What Counts as Knowledge

Outdoor educators teach outside, often removed from standardized school settings. Here, understanding knowledge can emerge in different ways. As Quay and Jensen (2018) highlight, "in most classrooms, it is rare for the varied and multiple self-wills of wider nature to be allowed to speak… Outdoor education offers a potential contextual advantage here in that it is premised on the notion of getting out-of-doors" (p. 296).

In most educational contexts, and even in many outdoor settings, knowledge is primarily situated within the human realm; knowledge is understood as human possession. It is describable, compartmentalised, centralised, and literally "knowable." This conceptualization of knowledge carries: a predisposition to control; a separation of, and hierarchy between, human and the more-than-human world; and a focus on measured outcomes that favour a particular form of rationality. This is discernable when coming to knowing the more-than-human world—where we often learn *about* the natural world, rather than *from* or *with* it. Furthermore, this learning is typically oblivious to the costs borne by the more-than-human. Even when teachers' agency is directed at child-centred learning, the agency of the natural world is often ignored.

The Wild Pedagogies touchstones offer examples for practice such as the rewilding idea of "nature as co-teacher" (Jickling et al., 2018). In this case, pedagogical approaches encourage including nature in the teaching process. The natural world is a vibrant, active, agential place that is worth listening and attending to, building relationship with, and learning from. However, this has significant implications for what knowledge is and how learning can happen. If nature becomes a co-teacher, then the human is de-centred, and learning become a shared project. Education can no longer be complete, or human-based. Taken seriously, the impacts are profound. What does it mean to recognize Salmon as a knower? How does pedagogy change if the human teacher shares space with myriad co-teachers? What happens to concepts of knowledge if it doesn't reside exclusively amongst humans?

Many outdoor educators understand knowledge as embodied, complex and, at times, beyond language. As Van Boekl (2020) reminds us, "the head is not the sole locus of cognitive thinking; our senses and entire bodily being directly structure, produce and store silent existential knowledge. In short, the whole human body is a knowing entity" (p. 247). This understanding does not just occur beyond the classroom; however, it can be particularly apparent in outdoor settings. Many outdoor educators will recall moments when they and their students are stopped in their tracks by the place, by a felt sensation. There is a moment of attention where understanding is suddenly grasped and there is a sense of knowing that is indescribable—that suddenly appears in defiance of logic.

This is not to suggest that rational and cognitive knowing, as currently understood, are not important. They are just not the whole story. Outdoor educators and their students can come to know in entangled, sensorial, and embodied ways that are often ignored by mainstream epistemological assumptions. As Nicol (2014) says, in

outdoor learning, "strands of knowledge need not be compartmentalised and unrelated" (p. 453). We are suggesting that outdoor educators and learners can experience knowledge that is more-than-rational, logical, fragmentable, and linguistic. We also suggest that these experiences of knowing and being-in-the-world are important across broad educational conversations.

12.4.2 The Role of Uncertainty and Risk

Outdoor educators know about uncertainty and risk in learning. These concepts are most frequently considered in relation to emotional and physical risks of adventurous activities; however, we seek to highlight another kind of risk encountered outdoors.

This risk flows from a wild and emergent curriculum on two levels. First, there is uncertainty when trusting both the learner and the place of learning. Second, there is uncertainty when trusting an emergent process, yet these kinds of trust are a key components of outdoor environmental educator practices.

There is always uncertainty when the natural world enters the learning process. To be hit by a rainstorm, strong winds, lightning, or a rising river can change the day dramatically. Equally a flock of birds, a mob of kangaroos, or a lone echidna can quickly revamp the learning interests and opportunities. Working in the outside brings a range of uncertainties that become a part of an outdoor educator's practice. During any day, educators are at their best when they trust spontaneous learning moments and, as skilful facilitators, embrace the opportunities that appear.

Teachers in such fertile environments need to prepare in different ways than do their counterparts in more conventional settings. Just as Dewey (1938) warned that the greatest threat to his philosophy of education was the assumption that it could be an improvised practice. So, spontaneous, and immersed educators must not assume that they can teach on an ad hoc basis. There is a great deal of background preparation that goes into this type of teaching.

Many educators focused on outdoor environmental learning are intimately familiar with the context and place in which they work, and they are able to recognise and respond to the educational moments when they arise. Although such a place-responsive focus is not guaranteed (Wattchow & Brown, 2011). Learning to listen to what the environment has to offer is a key skill in place-conscious outdoor learning (Greenwood, 2013, p. 98). It also requires the kind of preparation which comes from recognising place as both co-educator and curricular source—that is, seeing oneself as only as part of the teaching process. This kind of teaching challenges the educator to prepare the students, trust them to lean into their own learning, and to trust that the place will provide opportunities, as any good co-teacher would. In these insights, our field has offerings for mainstream educators, especially given our previous epistemological discussion.

12.4.3 Transforming Identity: What it Means to Be Human in a Less Alienated World

Historically, outdoor educators have been involved in identity work, often explicitly and sometimes implicitly. This involves assisting students to become who they want to be, to be differently in their worlds, or to behave differently in relation to others and/or the natural world. Yet, it appears this has not been enough to effectively change the modern cultural relationships with and in the natural world. Here we suggest additional forms of identity work that might be considered.

First, we argue here, and elsewhere (Jickling et al., 2018), that the ecological and social crises of our times rest largely on a human cultural penchant for both a separate positioning above the more-than-human world, and a drive for control—over each other, other beings, conceptions of truth, and even what constitutes rationality. If we are correct, this work of changing identity has to move beyond just changing individuals one at a time and begin working to change the very definition of what it means to be human. If the goal is to be human differently this world, then we must have opportunities to witness examples of cultural identity that are more equitable and ecological, and we must have the capacity to imagine additional options. As Snaza (2013) suggests "I propose that education be reconceived as a process that leads us—teachers, students, researchers, philosophers, etc.—*away from being human*, or at least away from thinking that we have any clear idea about what that means" (p. 49).

The second area of identity work concerns the concept and enactment of "teacher." Here we are talking about moving the teacher: away from the role of expert at the centre of planning and knowing—away from the designer and controller of "learning outcomes," and away from being the focus of class. We are talking about moving the teacher towards: a role as facilitator, a member of the journey, an interested inquirer, a co-teacher, and a recognizer of possibility. This is a seismic task, but one that offers a significant role to outdoor educators. For example, when working to help mainstream educators get their classes outside more often, we often encounter the assumption: "I can't go outside, I just don't know it well enough, what if the kids ask me about some tree I can't name?" Our belief here is that outdoor educators have much to offer their colleagues by virtue of their experiences teaching to the unexpected, helping learners find answers to their own questions, and being comfortable with not-knowing. This is not about "knowing" all the plants but about feeling comfortable in saying "I don't know" and stepping into that uncertainty.

Identity work is often about learning to hold space so that individuals have room for change—to become who they want to be, and to be supported in their journey to be differently in the world. Again, we suggest that many outdoor educators have skills to facilitate this kind of work, and these skills might be offered to the mainstream educational world more broadly.

12.5 Beyond Logic and Language

This section begins with a vignette describing an experiment in outdoor education. It arises from skills and practices developed over time and out of the imaginative "stuff" accrued during that period. The description of the project provides just one example of attempts to make learning a little wilder. The discussion about the experiment, however, opens up an important area of epistemological exploration.

The experiment took place during a canoeing journey that included a researcher and two young participants. Together, they sought interesting ways to represent their experiences and tactics for noticing and connecting with the places visited (Gablik, 1992). In this instance they chose pinhole photography as a vehicle for their expression. The homemade camera that they used had neither a lens nor a viewfinder. Making photographs, thus, demanded sensual presence during creation. They needed to get close to the ground to frame their pictures, and to pay attention to the light to estimate exposure times.

A core aim of this experimental journey was to loosen control over experiences, and to see what aspects of the landscapes would call them to make photographs. It was to see and feel what learning might arise from being in these places when the leash, tethered to controlling instincts, was loosened.

When the trip was finished and the photographs developed, the participants were asked to select the three photographs that they were most drawn towards. They were then asked to talk about their experiences around making the photographs, and the feeling evoked by viewing them. Sample segments of their conversations are presented below in three excerpts (Jickling, 2015).[2]

Andrew is 13 years old. While walking high into an alpine valley, a conversation went like this:

Well, Andrew, what do you think?
I don't have a word to describe it.
What do you mean?

It's like the flowers, the birds, the animals, the scenery—everything.

A second conversation, including an interpretive quotation, was similar:

Andrew, what do you feel when you see the picture we made at the end of that valley?
Wow!
What else? No answer.

He grasps this place in and exclamation of recognition, "the vibrant spoor of what cannot be said" (Lee, 2010, p. 22).

[2] Versions of the photographs and sample segments presented here were first published in *Cultural Studies of Science Education* (Jickling, 2015). The final publication is available at Springer via https://doi.org/10.1007/s11422-014-9587-y

These conversations represent the kinds of experiences familiar to many outdoor educators. We sometimes refer to these as "ah ha" moments where a kind of existential connection, relationship, or understanding suddenly arises and affects us, or our students (Figs. 12.1 and 12.2).

There are more famous examples of this phenomenon such as Aldo Leopold's life-changing experience that occurred on the day he saw a wolf die:

> We reached the old wolf in time to watch a fierce green fire dying in her eyes. I realized then, and have known ever since, that there was something new to me in those eyes—something known only to her and to the mountain. I was young then, and full of trigger-itch; I thought that because fewer wolves meant more deer, that no wolves would mean hunters' paradise. But after seeing the green fire die, I sensed that neither the wolf nor the mountain agreed with such a view. (Leopold, 1970, p. 138–139)

It was in this moment—in this experience—that Leopold was suddenly pierced with a blinding insight that altered his entire career trajectory. Or as Jan Zwicky says, that in sudden moments of recognition, "The this strikes into us like a shaft of light" (2003, p 53, left). The point here is that while the more famous experience that Leopold has given us is dramatic, convincing and, hence, useful in making a point, it is not rare. Andrew's experience described above can be familiar amongst attentive outdoor educators. And herein lies the basis for what is perhaps the most difficult, yet profound, contribution that outdoor educators can make to conversations about mainstream education.

Fig. 12.1 Poppies. (Photo: Bob Jickling)

Fig. 12.2 Kids and a cliff. (Photo: Bob Jickling)

However, later in the conversation with Andrew we looked at a photograph of three canoes on the riverbank, near the end of the trip. That part of conversation went like this (Fig. 12.3):

Oh yes, what I remember about that photo was being tired, and skipping rocks, and having twizzlers.
That's enough, questions!

> Dennis Lee (2010) asks, "How should we test a gestalt when it is simply **shown**? Not by hacking its bounty back into logical form and subjugating it to analytic verification; everything of substance is likely to be leached out in the process" (p. 37).

Andrew's first answers appear to arise from genuine bursts of wonder. However, his silence following the question, "What else?" in the second excerpt, felt more like an expression of resistance. He appears to sense that it can be perilous to talk about ways of knowing that fall outside of curricula of correct answers. He then sidestepped the final question that asked of his response to the three canoes. The Dennis Lee quotation that followed foreshadows the perils of asking evermore questions.

Fig. 12.3 Three canoes. (Photo: Bob Jickling)

To sketch out further understanding of this contribution we draw on Jan Zwicky's lyric philosophy.[3] She is convinced that understanding experiences in the world is too narrowly categorized when limited just logico-linguistic analysis (Zwicky, 2015), Thus, her lyric form of philosophy attempts to arrive at an understanding of experiences that affect us as beings with bodies and emotions—experiences that arise suddenly and affect us as sensuous beings in the world. Think about Andrew's responses to hiking in the alpine valley. His experiences suddenly announced themselves, not as a collection of logically linked parts; rather, they arrived in a moment as whole understandings. Zwicky calls these whole understandings gestalts and considers them neither rational nor irrational; they are, she suggests, *arational,* in that they elude adequate capture in words (2019).

We have pondered the durability of the *status quo* as framed in a variety of ways throughout this chapter. In this section we are led to wonder, as does Zwicky, why "are we so deeply susceptible to the charms of epistemological security?" (2019, p. 95*).* What goes missing when humans attempt to control conceptions of truth and even what constitutes rationality. It is a loosening of this control that is intriguing and leads us to wonder about other forms of knowing beyond those prioritized by mainstream educational systems.

[3] See also, Zwicky (1992, 2003).

Zwicky reminds us that our inclination towards logical "rules of thought"—rules that Andrew resists—may be in tension with an underlying proclivity to accept unexamined gestalts. They may also be in tension with the capacity of young people like Andrew to wonder at flowers, birds, animals, and scenery. She adds,

> There is no series of steps we can implement to precipitate gestalts in all audiences. Real thinking does not always occur in words; it can decay under analysis; its processes are not always reportable. This means that real thinking is in some sense wild: it cannot be corralled or regulated. But it is also the only access humans have to the experience of insight, to moral and mathematical beauty, to ontological vision. (Zwicky, 2019, p.95)

It is risky business for educators to stray so far from expected norms. Yet, in Zwicky's words, "where the danger lies, there too lies meaningful life" (2019, p. 95). So, we are challenged to ask what is lost: when thinking is limited to only thinking in words, when we rely on a narrowly conceived notion of rational logic, when we prefer to teach students to see a world that is reduced to its constituent parts? Can we be diligent in fulfilling our educational responsibilities if we do not embrace learning that increases capacity for thinking with and in the world? Is it reasonable to arbitrarily deprive learners of access to meaningful forms of knowing? The *arational*? We think not.

Here again we assert that outdoor educators have access to insightful experiences that can lead to a broadening of epistemological possibilities and ontological visions. The "ah ha" moments are not just quirky idiocrasies, they can be windows into rich understandings in the world that are often marginalized by the tyranny of cognitive rationality as it is presently conceived, rules of thought, assumed outcomes, and epistemological security.

These moments require pedagogues to leave space for student resistance and to exercise restraint in our analyses. Despite these challenges, many outdoor educators have a window into important educational possibilities. We urge them not to shy away from conversations about the insights that are revealed through their teaching and learning experiences. Indeed, we urge outdoor educators to join wild pedagogues, and other radical educators, in the heart of conversations about the future of educational possibilities.

12.6 Some Closing Thoughts

In planning this chapter, we all agreed that there was a natural alliance between outdoor education and wild pedagogies. In working with the relatively new idea of wild pedagogies, we were keen to introduce it to our colleagues. However, as we began to think about how to do this, we were reminded that outdoor educators constitute a special group amongst educators more broadly. In revisiting the somewhat unique skills that many outdoor educators have developed out of inclination and necessity (Blenkinsop et al., 2016), we suggest many already possess much of the imaginative "stuff" required to challenge the cultural of control of education and the vice-grip of the status quo.

It seemed natural, then, to use this opportunity to do much more than describe our wild pedagogies project. Here we are already working with a group of educators who know, at least implicitly, that imagining, resisting, knowing, and being are in some senses wild and that they defy being corralled or regulated. With this in mind, we have tried to spot places where outdoor educators have important things to say and practices to offer that are at the heart of conversations about the future of education in these troubled times.

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Chapter 13
Childhoodnature: Applying a Sympoietic Approach to Child-Outdoor-Nature Encounters

Karen Malone

13.1 Introduction

> The worth of education must now be measured against …the issues now looming so large before us in the twenty-first century. It is not education, but education of a certain kind, that will save us. _ David Orr (1994), *Earth in Mind: On Education, Environment, and the Human Prospect.*

Childhoodnature encounters can flourish in the Anthropocene. *Childhoodnatures* has educational potential yet to be fully realised when facing the current ecological crisis. Assembled theories supporting *childhoodnature* produce sparks when knocked together. There are theories you can pack up and take for a walk; theories when stuck help you emerge from sticky situations; and theories given sustenance by children's imaginaries by addressing crises they will inevitably inherit Malone et al., 2020a). Disciplines such as teacher education, environmental education, outdoor education, childhood sociology, landscape architecture and environmental psychology, have been slow on the uptake of working with, and contesting human/culture binaries, anthropocentric thinking, and human exceptionalism. A strong humanistic, behaviourist and deterministic paradigm has been influential in the conception of childhoods, education, and nature. While there has been some leverage through theories such as biophilia and affordance theory the theoretical work has mostly been narrowly focused on social-cultural and sustainability frameworks solely attentive to humanistic agendas. The main exception to this has been in geography and environmental humanities, with many urban, human, and cultural geographers who have been interested in children, multispecies and biodiversity have

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_13

applied these theories and approaches in their research. The field of children's geographies for example has engaged in a range of theoretical approaches including posthumanism and new relational materialist theories and more, but most of this has been outside of education. There are many exceptions here of cause with the elegant theoretical work of the Commonworlds collective (Taylor & Giugni, 2012; Taylor, 2013), the early seminal writings of Karin Hultman and Lenz Taguchi (2010), Clarke and Mcphie (2014), Pauliina Rautio (2013) and the many authors who published in the International Research Handbook of Childhoodnature (Cutter-Mackenzie-Knowles et al., 2020) all setting foundations from which a plethora of publications have emerged.

Central to the theorising of *childhoodnature* is the view humans are nature, we emerge from nature, and we will return as nature. This is not a radical way of knowing the world, Indigenous and First nation people have core to their belief's understandings of the circular quality of life of human and nonhuman entities. Non-human in this chapter refers to "nonhuman living and nonhuman-made inert entities, and elements that are typically separated into the valorised and exteriorised 'nature' camp – such as other animals, plants, weather, water, and 'natural' materials" (Taylor, 2013, p. 118). Science shares the same understandings around the finite nature of elements and materials on the Earth and in the Universe. It is commonly known, the composition of all living things is composed of six core elements carbon, hydrogen, nitrogen, oxygen, phosphorus, and sulphur (Deamer, 2019a). Indeed, even beyond our own planet, recent research has demonstrated that humans and our galaxy share up to 97% of the same atoms.

> The atoms of carbon, nitrogen, oxygen, sulphur, and phosphorus that comprise all life on the Earth were forged in stars at temperatures hotter than any hydrogen bomb. As living organisms, we are not in any way separate from the rest of the universe. Instead, we borrow a tiny fraction of its atoms for a few years and incorporate them into the transient molecular structures of cells that are the living unit of all life on Earth (Deamer, 2019b, n.p.)

Indeed, scientifically, and theoretically we are merely matter circulating with and through bodies, space, place, and time. One way of describing this entanglement of matter is *sympoiesis*. Making together or making with *sympoiesis* is a philosophical, ontological, and epistemological concept supported by Donna Haraway (2016) that rejects notions of human exceptionalism and supports a view all creatures are intra-acting as dynamic complex systems. It supports an entangled and relational view of creation; entities forever adapting, changing, and evolving in relation with one another. Boundaries are blurred between bodies, what is being human and what is nonhuman is no longer clear. "Critters interpenetrate one another, loop around and through one another, eat each other, get indigestion, and partially digest and assimilate one another and thereby, establish sympoietic arrangements that are otherwise known as cells, organisms, and ecological assemblages" (Haraway, 2016, p.59).

Applying a sympoietic approach to outdoor encounters in this chapter allows me to explore the doing of *childhoodnature*. *Childhoodnature* as a concept explicitly recognises children as ecologically congruent all entities who are currently manifesting liveability on a damaged earth. *Childhoodnature* is underpinned by

posthuman theories and pre- and postanthropocentric pedagogical approaches – an enticing of children and elders to think deeply of enmeshed *childhood–outdoor-nature* encounters.

13.2 Assembling Theories: *Childhoodnature,* Anthropocentrism, Sympoiesis

Childhoodnature informed by its posthumanist and Indigenous/First Nations alliances critiques human/nature binaries and how it limits what it means 'to-be', to-be other, to-be animal, to-be matter, to-be human. Human as not only human, but to-be a collection of possibilities in the making. In the order of Inter-being a concept introduced by Vietnamese philosopher Thich Nhất Hạnh, everything co-exists. "To be" is to, inter-be. You are never alone. You always in a state of 'inter-being' knowing and being in relation with everything else (Nhất Hạnh, 1988/2009, pp. 3–4). Humans who are not outside of the world but deeply entangled as matter circulating with and through bodies, places, and time. By moving away from an explanation of children's environmental encounters from a humanist perspective where we: "…understand and act in the world based on our separation from it – articulated in the constraining, alienating and resentment-filled modernists divides of human/nature, subject/object, culture, environment", a posthumanist approach allows a consideration of how we, "should develop our understandings around our attachment to the world" (Chandler, 2013: 516).

This focus on shifting away from a romanticised or humanistic view of the human/nature relationship has been a feature of scholarship in a range of disciplines evolving over many years/centuries (Head, 2016). So even though they feel new for many, the history can be traced in a range of western philosophical approaches by theorists such as Spinoza, Derrida, Deleuze and Guatarri, Naess, Merchant, Plumwood. Beyond these, many Indigenous and First Nation perspectives have ancient traditions that reveal humanity as having inextricable relations with the other than human world (Bignall & Rigney, 2019). Those whose philosophies have often been overlooked/ignored by the white western imperialist academic nobility. Many have argued posthuman theorists need to be wary, tread careful to ensure they do not ignore the prior existence of Indigenous knowledge, be seen to be taking up this ancient philosophical terrain (Braidotti & Bignall, 2019; Malone, 2022). I argue there are several key conceptualisations posthumanism and indigenous worldviews share including: "refusing human exceptionalism and anthropocentricism; employing a 'vitalist ethics of human responsibility' towards all life-forms (Bignall & Rigney, 2019, p.159); rejecting binary thinking between Indigenous and western worldviews and embracing relational ontologies to support ecological interconnectedness" (Malone, 2022, n.p.).

Posthuman has at its core a focus on decentring the human as the means to acknowledge and navigate our *sympoietic* relationship of being in the world with a

host of others. A posthumanist perspective takes seriously the need to stop the "anthropological machine", the constant "production" of absolute dividing lines between humans and the rest of the natural world (Smith, 2013). Michael Smith argues "Exceptionalism, whether religious or humanist, regards human communities as distinguished by an ethics and/or politics in which no beings other than humans can possibly participate" (2013, p. 24). Only what matters to humans matters at all. Many ecologists, ecofeminists, ecophilosophers, conservationists and Indigenous people have over centuries recognized the limitations of human exceptionalism and argued human beings are in community with other species whether, or not they recognise this, whether, or not they deny these ecological realities.

And although some cognitive psychologists have tried to argue a pattern of human exceptionalist thinking is innate in children from birth – this has also been challenged throughout history and especially disrupted in recent times with research studies in more diverse non-western societies. Research supports children's anthropocentric thinking varies according to such factors as their age, experience of nature, and cultural assumptions they have been exposed to through religion, cultural practices, and formal education about the place of humans in the natural world. For example, children raised in rural environments appear to use anthropocentric thinking less than their urban counterparts. Maybe because of their have a greater familiarity with different species of animals and plants, possibly because they have adults who speak of life and death differently than formal education textbooks? Studies involving Indigenous and First Nation children show they have little or no use of anthropocentric thinking. If nurtured these non-anthropocentric views can be sustained and often held synchronously with western anthropocentric views.

In a recent study with my indigenous colleague Dr. Sara Jane Moore exploring with pre-language indigenous and non-indigenous toddlers, revealed they had an innate lack of anthropocentric thinking. In our shared paper wrote we wrote "Child bodies (indigenous and non-indigenous) who through their sensorial openings find spaces to be with the world beyond the humanist limits imposed by anthropocentric positions that humans are exceptional bodies outside of other beings" (Malone & Moore, 2019, p.18). Bringing us to the conclusion human exceptionalism is a social, cultural, and ecological artefact of our western industrial society.

In the worldly arrival of new materialism and posthumanist theorising over the past decade we are posited to adopt a new creativity and agency that is no longer positioned as the property of humans alone (Chandler, 2013). With child in nature shifting away from being the only agential body and focusing on the materiality of child bodies and the bodies of other non-human entities as relational assemblages it allows for a new ethical and theoretical imagining for children and their encounters with place and nature. Rather agency, and this case children's agency when responding to the ecological crisis will be recognised as an assemblage, with this entanglement of matter being known as sympoiesis (Haraway, 2016). Making together or making with, sympoiesis is a useful philosophical, ontological, and epistemological concept utilised in pedagogies of *Childhoodnature* that rejects notions of human exceptionalism (Malone, Tesar, & Arndt, 2020b). Rather it supports an entangled and relational view; beings forever adapting, changing, and evolving in relation

with one another. Boundaries are blurred between bodies, what is being human and what is being nonhuman is no longer clear. *Childhoodnature* has been theorised in this introduction as the lively, messy everyday lives, of living well with a host of others. The story in this chapter traces complex webs of *childhoodnature* by gesturing how theory traces experiences and how data can sing with potential new tunes for children, educators, and the planet. Stories like the one shared here theorising through the concept of enchantment, can act as provocations to educators. Providing educators and learners with the means to consider how to enact outdoor learnings that will disrupt human/nature dichotomies, blur boundaries between Indigenous and posthuman ontologies and nurture sensorial and non-anthropocentric knowing.

13.3 Enchantment: Storying *Childhoodnature*

I can see many worlds from up here. Mum, mum come and see – Wren aged 4

"To be enchanted", according to Bennett (2001), "is to be struck and shaken by the extraordinary that lives amid the familiar and the everyday. Starting from the assumption that the world has become neither inert nor devoid of surprise but continues to inspire deep and powerful attachments" (p. 4).

For many the current state of the world, with its wars, virus, ecological crisis relays an image of precarity and disenchantment. The age of the Anthropocene, the human epoch as named by western academia paints a picture of anarchy, despair, injustice, pain, suffering, fear, and loss. Bennett (2001) responding to this image of a disenchanted modernity asks not if this is real but, "rather, whether the very characterization of the world as disenchanted ignores and then discourages affective attachment to that world" (Bennett, 2001 p. 3). The question of a relationship between enchantment, attachment and care she argues in her book *The Enchantment of Modern Life* "is important because the mood of enchantment may be valuable for ethical life". She writes if "popular psychological wisdom, has it that you have to love yourself before you can love another, my story suggests that you have to love life before you can care about anything". (Bennett, 2001 p. 4).

Two questions are ruminating in my thinking as I write with Jane Bennett:
Does this world still retain the power to enchant us?
Can we fall in love with this world?

13.3.1 Enchantment as Childhoodnature

The storying of enchantment I am writing is conjured-up while paying deep attention to one video taken from an archive of short videos of Wren. The videos all around 5-min long were recorded on weekly visits over a period of 3 years. They

depict ordinary experiences of a toddler living an everyday ordinary life: a grandmother with her granddaughter walking-with many worlds (Fig. 13.1).

the meeting of feet with earth
the allure of a rocky gap
the magnetic darkness beyond
the touching pointing finger

the noticing of a feather
the reaching out to grasp
the fumbling of an unsure touch
the dancing wind playing games

the walking-with the feather
the allure of bearing witness
the feathering at the grate
the ever-silent companion

13.3.2 Enchantment Is a Gift

Children it seems are born with an openness for enchantment, it comes easily but adults must work hard to sustain its power. To be enchanted is to be provoked by a surprise encounter, a passing glisten of sunlight on a deep blue sea, a momentary gaze of recognition held between species, a fleeting smell drifting in nostrils enlivening memories, or a feather softy dancing on uncooperative fingers. To be enchanted is to be held by those surprise encounters and journey on with them, then they have time to play, to resonate in my knowing. "To be enchanted is, in the moment of its activation, to assent wholeheartedly to life—not to this or that particular condition or aspect of it but to the experience of living itself" (Bennett, 2001 p. 159), It is the wonder of minor experiences where the gift of enchantment purchases itself. Similar but far more than the expression often used with children and their natural encounters a 'sense of wonder' or the 'cathedral effect' often discussed in outdoor education as a response to nature as being an object of reverence. Being a taken back but its enormity or beauty. Awe-inspiring, feelings of awakening triggered by an expansion of one's awareness. Enchantment and wonder remind us we are finite, small and part of something outside of ourselves. Knowing need not be orchestrated enchantment plays its own music.

Fig. 13.1 Stills from video 6650, Daylesford Lake, December, 2017. (Credit: Author)

13.3.3 Enchantment Is Sensorial

"Sensuous experience is central to enchantment, but, of course, not all sensuous experience enchants" (Bennett, 2001 p. 36). Enchantment draws us in, to pay attention to the ensemble of sounds, smells, tastes, forms, colours, textures occurring in the array of minor encounters we experience when living our lives. (Bennett, 2016). Enchantment comes as a surprise, a disruption, something novel reveals itself. A

ladybug crawls on your skin, tickling hairs causing goosebumps as it wanders aimlessly up your arm. Lost in the moment this sensorial encounter cultivates a moment of quiet, care, connection.

What if this enchantment, this innate capacity to be curious, to love, to notice the tiniest of worlds, to see many worlds from up here is at threat of being lost? Along with the Christmas beetles and the many other the little things that run the world which are all in steep decline, the importance of enchantment as luring, a charmer and trickster in outdoor learning is in danger of being lost. Children as nature recognise, they are in a knowing-world-creation through look, feel, smell and touch. In a knowledge-world-creation knowing is enacted through the body not through the human brain. Adults need not 'teach' they need to just move away, allow the knowing creation to happen. As with Wren walking-with enchantment is to create worlds by noticing, paying attention, responding to the enticement, the trickster feather wanting to play in the wind not be held by fumbling fingers. This openness, this curiosity, this love for a world even if at times it feels disenchanting is critical to a new contemporary non-human-centred learning outdoors.

> Without modes of enchantment, we might not have the energy and inspiration to enact ecological projects, or to contest ugly and unjust modes of commercialization, or to respond generously to humans and nonhumans that challenge our settled identities. These enchantments are already in and around us. (Bennett, 2001 p. 174)

13.4 *Childhoodnature* as Challenging Pedagogical Re-turnings

> If thoughts are alive and if that which lives thinks, then perhaps the living world is enchanted. What I mean is that the world beyond the human is not a meaningless one made meaningful by humans – from Eduardo Kohn, *How Forests Think* (2013 p. 72)

Contemporary outdoor learning theorized with a relational ontology and conceptualised as *childhoodnature* has become an emergent trend in outdoor education due to an ever-increasing contemporary re-turning interest in outdoor nature play (Cutter-Mackenzie-Knowles et al., 2020; Malone, 2015, 2016, 2018). Historically grounded in Indigenous and First Nation approaches to country (Nxumalo, 2020; Tuhiwai Smith et al., 2018), and the past writings of philosophers and educators such as Rousseau, Froebel, Steiner, Dewey, and Reggio Emilia. Much of this current resurgence has emanated pedagogically from Scandinavian countries and the Forest school's movement.

Forest schools and especially in early childhood 'forest kindergartens', have become commonplace in Scandinavian countries with the concept now being 'exported' to several settings around the world including Australia. Forest schools historically emerged at the turn of the twentieth century in response to the widespread of tuberculosis in Europe which was taking a huge toll on children. The first *Waldschule* (forest school) opened in Berlin in 1904 to limit child-child contamination and to help those recovering from the sickness. Fresh air and the outdoors were

viewed as being very beneficial to learning, health and well-being. Success of the outdoor schools spread with forest schools opening in Scandinavia, open-air schools in Britain and in 1912, a nationwide movement for fresh-air schools was launched across the USA. The image below depicts an outdoor learning classroom in New York at the time, where an art class has been moved to the roof. Documents from this time reveal schools took up classes in abandoned ferries, another in central park and many other open spaces around the city (Fig. 13.2).

In Australia 'bush kinder' and 'beach kinder', where children regularly spend an hour, a day or even their entire time in natural environments using only what the outdoors provide, have become more popular over the past decade. While this is often spouted as 'new' and 'revolutionary' practice of learning outdoors, research illustrates outdoor learning has been part of the Australian education landscape in early childhood and primary years for many decades.

The first national research study on nature play, outdoor learning, and its impact on environmental learning in Australia entitled *Children's Environments* was conducted by Karen Malone and Paul Tranter in 2003 (2003a, b, 2005). The study of several primary schools, private, community and public schools around Australia, explored how school communities used the potential of schoolgrounds and outdoor spaces beyond the schoolground as sites for play based natural learning and to study cross curriculum disciplines such as health and physical education, STEM, humanities, and the Arts, throughout a child's school day. The study revealed most schools

Fig. 13.2 Image art class on New York City roof, 1912, Credit: Philipp Kester/ullsteinbild via Getty Images (https://www.nytimes.com/2020/07/17/nyregion/coronavirus-nyc-schools-reopening-outdoors.html)

supported outdoor learning as essential in providing pedagogical diversity and yet the quality and quantity of 'places' and 'learning outdoors' available for children was dependent on the value and importance Principals, educators and parents placed on outdoor learning. Whether the school community activated policy development, facilitated the design and maintenance of outdoors spaces, created genuine links to the curriculum, provided professional development to support a repertoire of pedagogical approaches. The value of outdoor learning was driven by philosophical, theoretical, and pedagogical views of staff, which could be very varied, this often dramatically impacted on the continuity of opportunities for taking children's play and cross-curriculum learnings outside (Malone & Tranter, 2003a, b, 2005; Tranter & Malone, 2004). I followed this study with a commissioned review invitation by the department of education, UK to document how and where learning outdoors could take place and how these experiences of learning outside of classrooms could provide new and rich engagements with outdoor environments. This review showed to reap the emotional, physical, educational, personal, and social benefits of learning outside of the classroom, any space or place out of the classroom was valuable (Malone, 2008).

> *Because if you just read stuff out of a book, it's not enjoyable and you don't really remember it. But if you go there then you'll enjoy yourself, you'll have great fun and it'll stick in your mind* – Secondary School student (Malone, 2008, p. 14).

In response to the recent COVID-19 pandemic we saw examples from around the world where verandas or external corridors, courtyards, roof tops, school grounds, gardens, ovals, blocked off streets on school boundaries, nearby local parks and playgrounds, and a vast array of other local community spaces such as the beach, forest and village centres were all used as outdoor classrooms as a means to mitigate the health impacts of the pandemic (Malone, 2021). In New York alone in response to the pandemic and school re-openings in 2021city officials approved over 1100 proposals for public schools to move students outdoors. Some wanted to use their school grounds, others closedown streets or take students to local parks for lessons (Malone, 2021) (Fig. 13.3).

Building on five significant reviews that focused on children learning in natural environments (Rickinson et al., 2004; Malone, 2008; Gill, 2011; Dillon & Dickie, 2012; Fiennes et al., 2015) I conducted with Sue Waite (Malone & Waite, 2016) a follow-up international review of research from around the world to explore does evidence support the view being outdoors contributed positively students' learning and to their health and wellbeing. All these reviews over many years, have identified through significant robust evidence that outdoor learning can, and has made, a significant impact on improving children's sense of connection with the natural world. Many of the reviews coincided with a time when childhoods were dramatically changing, and children were experiencing more and more limiting opportunities to be outdoors in formal or informal learning settings. These limitations were having consequential negative effects. Evidence also revealed lack of opportunity to be present in natural environments denied children opportunities to develop

Fig. 13.3 Image Learning outdoors has many health and social benefits. (Source: Shutterstock)

understandings and experiences which nurtured empathy, creativity, and imagination and this has had consequences for them when finding ways to be active, contributing members for a sustainable future (Malone & Waite, 2016).

Again, turning to the COVID-19 pandemic from 2020–2022 where arguments were made, and policy and schools responded when it become clear being outside not only lowered the risk of transmission of the virus, by making it easier to socially distance and providing better ventilation and fresh air, but it also supported students' social, emotional, and mental well-being during a time when many educators and students were experiencing significant anxiety and stress. Research has shown consistently over the course now of several decades being outside has many positive health, social, emotional, ecological, and learning benefits for students and staff across all ages and at early childhood and school levels (Fig. 13.4).

While in Australia the response to learning outdoors as a COVID mitigation strategy was not broadly taken up by governments or schools during the pandemic there were some policy supports. The NSW Government, for example, canvassed outdoor classrooms as a key roadmap strategy for school re-openings in 2022 and at this same time, the Victorian Government including in their re-opening strategy the statement a 'Move to an indoor/outdoor program (shifting to as much outdoor programming as possible)' for early childhood centres and services. Without very clear or specific directions, many teachers around Australia headed outdoors anyway during the pandemic. A K-1 primary teacher in NSW told me,

Fig. 13.4 Image of a child learning maths outdoors. (Credit: Author)

> The days I'm onsite, I keep the kids outside most of the day. We go into the garden and read stories, complete writing tasks, art, and math's games – using the gardens as stimulus. (Malone, 2021)

In terms of embedding *childhoodnature* as part of everyday schooling, even though research has shown how effective it can be, many of the earlier challenges remain. That is, overcrowded curriculum, pressure on schools to bequeath high performing students as the litmus of success and the view outdoor learning as merely an add-on, an indulgence rather than an essential learning about us – what it means to be human and what is means to be in the world. Additionally, much of the teaching with children 'about' nature focuses on and supports human exceptionalism and binary thinking. Supporting nature as outside of us, as a resource, sets up a divisive human/nature binary; we aren't nature, humans aren't animals, we are exceptional. Rather than supporting binary thinking, the challenge is to consider how to reinsert humans, as part of a lively ecosystem, that we live in sympoiesis with all other entities. And finally, how can we occupy a reinvigorated space for making bridges between contemporary western philosophy and Indigenous knowledges in outdoor learning. To expand colonial ecologies, by acknowledging our storying of human life excluded thousands of years of Indigenous knowledges (Braidotti & Bignall, 2019) and find ways to re-turn to, and nurture non-anthropocentric ways of thinking, being and doing 'life'.

13.5 Conclusions

According to anthropocentrism, only human beings have moral values, and they dominate the natural world. Non-anthropocentric views require sustenance, revision, or extension of a moral standing to such entites as animals, plants, country, rivers, oceans, and atmospheric processes (Jakobson, 2017). Outdoor environmental education supported through the conceptual framing o childhoodnature is essential for supporting a child's environmental ethics and moral certitude the bedding down of non-anthropocentrism and ecological sensorial knowing. This is especially true of childhoods where there has been limited access to lively biodiverse spaces to dwell and re-enliven those feelings of being in *sympoiesis* – dynamically entangled in earthy ecosystems. Those who may have otherwise found find themselves through a sense disconnection adopting anthropocentric ways of thinking about relations with other earthlings.

While COVID-19 brought some attention to the possibilities for learning outdoors, the USA national survey conducted in 2020 of environmental and outdoor science education organizations funded by the National Science Foundation sadly revealed, 11 million kids who would have been served by 1000 organizations will have missed environmental and outdoor science learning opportunities. About 60% of them are from communities of colour or low-income communities (Collins et al., 2020). These losses for children to be outdoors in the USA during COVID-19 will have been similarly felt by children across the world, especially in many low-income nations where lack of adequate play spaces within neighbourhoods was already commonplace. Experiencing lockdowns, sickness, school closures, neighbourhood playgrounds shut, unable to visit wild places for refuge has meant humans, including children, have come to watch the ongoingness of the world without them in it. There is a lot of work to be done in educational settings to bring children back into the outdoors. Going to back to indoor classrooms with little or no opportunity to recapture what outdoor learning has been lost could be devastating for future generations.

Conceptual learnings as those evoked though *childhoodnature* provide opportunities to expand the way we as humans come to-be with others in the world. As children head back to more stable times in schools and early childhood centres, we need to support educators to seek out and value a re-turning, a reinserting of an enmeshed sympoietic approach to child-outdoor-natures. To reconsider what being successful means for educators and learners in school and early childhood settings. Can we use this time of retrospection to consider is the way education is currently produced best suited to all humans, humanity, the future of the planet? Are there other ways of being in the world congruent with healing and restoring a planet? Would the world look different if we presumed, we are individually and collectively, always simultaneously human, and non-human, forever deeply implicated in the ongoingness of our planet. We are mere stardust after all! And should we ask

ourselves do we have the moral courage and ethical fortitude to recognise our inhumanity? Can we together consider ways to support and sustain the liveability of a planet we have damaged irrevocably? I hope so. I finish this chapter with one of my favourite and inspiring quotes by David Orr (2005):

> The plain fact is that the planet does not need more successful people. But it does desperately need more peacemakers, healers, restorers, storytellers, and lovers of every kind. It needs people who live well in their places. It needs people of moral courage willing to join the fight to make the world habitable and humane. And these qualities have little to do with success as we have defined it.

Acknowledgments The author would like to acknowledge the contribution of Dr. Sarah Jane Moore, Research Fellow, Dr. Sarah Crinall, Wren, her family, and the host of earth beings who supported the 'children sensing ecologically' research study.

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Part III
Outdoor Environmental Education Programs as a Worldwide Phenomenon

Chapter 14
Field Ecology: Learning the Nature of Science in Outdoor Environmental Education

Jan Činčera and Michal Medek

14.1 Introduction

The pandemic situation in 2020–2021 revealed an important phenomenon: the low level of trust in science in contemporary society. Similarly to other countries, even though the Czech Republic experienced relatively strong pandemic waves and vaccines were easily available, by March 2022 the number of fully vaccinated people had not exceeded two thirds of the population (COVID očkování, 2022). This rather low vaccination rate can be partially attributed to the anti-vax movement which does not question only the scientific evidence regarding vaccination but evidence-based thinking per se (Germani & Biller-Andorno, 2021). Several studies suggest that the growing distrust of vaccination predates the COVID pandemic of 2020/21 and may represent an alarming trend of distrust in science (Mad'ar, 2013; de Figueiredo et al., 2020).

This supports a strong social need to promote scientific literacy among students. Understanding of "how science works" may also be crucial for social acceptance of the necessary climate-change mitigation strategies.

The concept of such "scientific understanding" remains a matter of interpretation – some authors define it as the ability to read or understand scientific texts (Norris & Phillips, 2003), while others refer to the concept of "the nature of science", i.e., to understanding the logic of the scientific process, "how science works" (Lederman, 1992; Akcay & Akcay, 2015).

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_14

Thanks to its outdoor settings and environmental focus, outdoor environmental education offers a unique opportunity for developing this kind of understanding through carefully designed field programs. In this chapter, we present as a case study the Field Ecology Program, which is a residential program for high-school students offered at the Kaprálův Mlýn Environmental Education Center.

14.2 Context

Outdoor environmental education has a long tradition in the Czech Republic. It is rooted in the non-formal conservation movement of the 1970s that thrived as an antipole to the impotent official communist youth organizations (Vaněk, 1996; Máchal, 2000). Many of its proponents turned into environmental education professionals after the fall of Communism in the 1990s, establishing environmental education centers and offering specialized 1-day and, in several cases, also residential programs for schools.

Supported by the Ministry of the Environment, Pavučina, the umbrella organization of environmental education centers, grew into the leading force behind the development of the environmental education field in the Czech Republic. Pavučina represents about 40 environmental education centers in a nation of ten million. We can see a growing emphasis on outdoor environmental education programs in the new millennium. While in 2005 there were only three residential environmental education centers focused on outdoor programs, in the following 10 years their number increased five times, particularly thanks to support from European Union structural funds. The greater financial sustainability of residential programs also played a role. Almost all residential centers focus on outdoor programs. Half of Pavučina's members provide residential outdoor programs for approximately 14,000 students every year. Our case study center, Kaprálův Mlýn, is the most prolific provider of outdoor residential programs for high schools in the country, offering more than a quarter of Pavučina's programs for this target group in the pre-Covid year of 2019 (SSEV Pavučina, 2020).

Since 2005, the national curriculum has given schools freedom to tailor their school curricula to their needs. Environmental education is a mandatory cross-cutting theme that should be integrated into the school curricula one way or another. Many schools incorporate programs organized in environmental education centers into their environmental education plans.

One of the main issues in the Czech environmental education discourse is the programs' quality. As the field grew from its non-formal roots, some of the applied instructional strategies remained on an intuitive basis. However, starting in the first decade of the twenty-first century, program evaluation has become more common in this area of education (Činčera, 2006a, b; Činčera et al., 2009).

The Field Ecology Program is offered by the Kaprálův Mlýn Scout Environmental Education Center. The center is a member of the SCENES global network (Scout

Centers of Excellence for Nature, Environment and Sustainability) organized by the World Organization of the Scout Movement. The center was one of the first ones to receive the Czech label "Quality Environmental Education Provider", which was introduced in 2016.

Czech Scouting has the largest constituency among children's and youth organizations in the country – 3.5% of all children aged 7–18 are currently involved, and much higher percentage have been involved at certain points. The movement put more emphasis on environmental education in its 2008 strategy (Klápště, 2008). Since 2019, Czech Scouting has opened a discussion on promoting climate change education in its activities (Junák – český skaut, 2019). The Kaprálův Mlýn Scout Environmental Education Center was established in 2012 as an outreach activity of the Czech Scouting in the field of environmental education.

14.3 The Learning Approach Applied

One of the possible strategies for promoting scientific understanding in schools is the inquiry-based learning approach (Straits & Wilke, 2002). This approach is based on the idea that if students engage with scientific methods (e.g., they formulate their hypothesis, plan their research, and collect, analyze, and interpret data), they will develop the necessary skills and understanding of how science works. While some researchers have questioned the effectiveness of this approach (Gautreau & Binns, 2012; Magnussen et al., 2000), others consider it sound for developing students' scientific competence (Summerlee & Murray, 2010; Wolf & Laferriere, 2009).

Inquiry-based learning is used as the key educational approach within the Field Ecology Program. The Program's authors acknowledge drawing their inspiration from the Field Studies Council (UK) programs. The Program has also been influenced by the principles of the Real World Learning Model (Real World Learning, 2015) highlighting the importance of experiential learning, self-directed learning, and value-based framing of an outdoor program. These principles were recently analyzed by Činčera et al. (2021). The importance of students' autonomy strongly resonates in the Field Ecology Program and forms a core of the Kaprálův Mlýn Center's educational approach inspired also by the Scout Educational Method.

During the Field Ecology Program, students work with digital media (see Fig. 14.1). As Peffer et al. (2013) argue, the attitudes of non-formal education leaders toward mobile technologies may be complex, with some leaders being reluctant to accept their utilization in outdoor programs. In this case study, the evaluation (see 14.5) showed no negative impacts of using digital technologies within the outdoor Program.

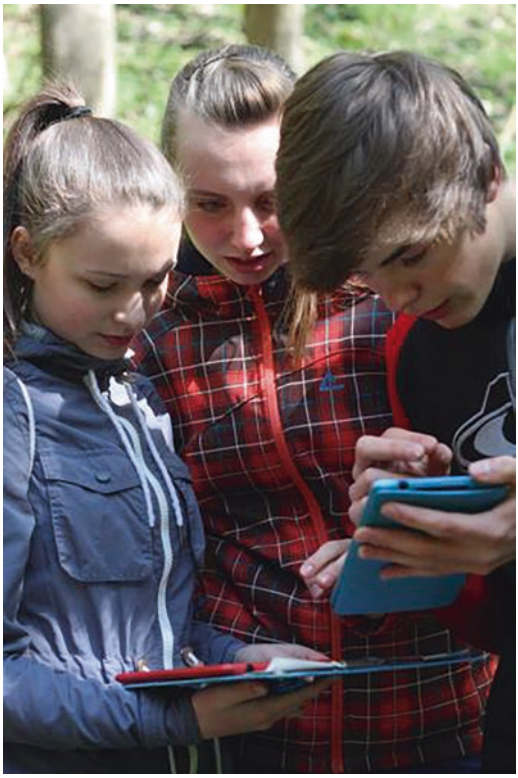

Fig. 14.1 Tablets are used for orientation and data collection throughout the program. (Photo: Jakub Pejcal)

14.4 The Field Ecology Program

The Field Ecology Program takes place in the beautiful natural setting of the Moravian Karst. Just a few minutes' walk from the Kaprálův Mlýn Center, students can find caves and underground rivers, and there are 12 different habitats within one-kilometer reach.

Program Aims
The aims of the Field Ecology Program are:

Knowledge

- Understanding basic ecological concepts and how ecosystems work.
- Becoming familiar with the specifics of different habitats.
- Identifying the history of human influence on habitats and the means of today's habitat management.

(continued)

Skills

- Analyzing and solving problems, using the scientific method of reasoning.
- Collecting and processing data.
- Interpreting research findings and presenting them.

Emotional objectives

- Understanding the human position in nature (humility).
- Feeling amazed by nature (opening new horizons).
- Gaining motivation for future discoveries in the natural world.

Values

- Showing respect for nature in its different forms, gaining a sense of personal responsibility.
- Realizing the potential of an individual to influence the society.

Program Outline

The residential Program is offered in three versions of varying lengths, lasting 3, 4, or 5 days. The 3-day version is preferred by most schools. Such a 3-day Program consists of Day 1, Day 4 and Day 5 activities. The 4-day version omits Day 3 (Table 14.1).

Table 14.1 An overview of the field ecology program at the Kaprálův Mlýn Center (Kaprálův Mlýn, 2016)

	Morning	Afternoon		Evening
Day 1	Arrival, meeting with staff, exploration of the center and its eco-technologies, program outline & entry motivation	Local discoveries & sharing		Campfire + bat detection (April to October)
Day 2	Moravian Karst guided tour – Broadening perspectives from day 1, teams collecting information on a given topic			Optional: Thematic board game
Day 3	Reflection on day 2 – Scientific posters	Ecosystem game	Introduction to the scientific method, division into research teams, choosing research topics	Free evening – Students' own program
Day 4	Introduction to the selected research topics, collecting data	Data analysis and presentation of results		Night program – Values
Day 5	Educational trail review game, outdoor activities	Feedback, departure		

Fig. 14.2 Where next? Discovering natural phenomena in peer groups. (Photo: Jakub Pejcal)

Day 1
The first day prepares the frame for the rest of the Program. After the initial motivation session and introduction of the lecturers, the students are shown around the environmental center, learning about the eco-friendly technologies that will be used during their stay. Then they are introduced to the Program schedule in detail and informed that they will be responsible for a considerable part of the Program, so they can expect less guidance than they may be used to. In the afternoon, the students get into teams of 5–7 and set out on four trails to explore the landscape of the area (see Fig. 14.2). Each trail is about 6 kilometers long and takes the students 2.5 h to walk because along the way they must fulfill 10 tasks which open up the themes that will be further developed in the following days. The tasks focus students' attention on a natural phenomenon they are asked to explain. The students use tablets for orientation and take pictures of their adventures that they will share with their classmates after returning to the center. This unstructured activity is very popular as it gives students the opportunity to discover phenomena such as caves on their own.

Fig. 14.3 Day 2: A guided tour with a ranger. (Photo: Jakub Pejcal)

Day 2
The students split into four teams that differ from those on Day 1. Together they set out for a guided tour around the Moravian Karst protected landscape area (see Fig. 14.3). During the tour, they see similar natural and environmental phenomena as on Day 1, but in different settings and on a larger scale. This creates knowledge build-up. Each team focuses on certain aspects of the tour: geology & geomorphology, hydrology & cave systems, natural habitats, and human interventions in nature. The students collect data on their topics using the tablets.

Day 3
The students process the data collected on the Day 2 and create "scientific" posters. This activity clearly shows the level of reaching the Program aims in the cognitive area. The activity also serves as the second review point (the presentation on the Day 1 was the first one). There is a sum-up game in the afternoon on ecosystem bonds and after that comes the final

(continued)

activity – students' own scientific research. The students are divided into teams that differ from those on Days 1 and 2 in order to gain maximum collective knowledge and experience. They got short introduction to scientific thinking: first task is to sort out the characteristics of scientific thinking from those of common sense and then students collectively design and execute a model research study (e.g., which of these two apples tastes better). The lecturer guides them through the process, pointing out the weak points in the suggested research methodology and interpretation of the "findings". The teams also choose the topics for their research (two teams for each topic).

Day 4

The students are introduced to the research questions (these are given to the students because the collected data are shared with other institutions), and they also receive information about possible research methods, measurement tools, and worksheets to collect the data. Their task is to come up with a step-by-step research method. Before they set out to collect the data, the lecturer checks if they thought through all the eventualities (due to time limitations, there is little chance to collect new data later in the day). After collecting the data, the students process and interpret them. The presentation of their findings is the culmination of both Day 4 and the whole Program from the cognitive perspective as well as the skills-development perspective. The research topics are as follows (Fig. 14.4):

- Disappearance of water in the local stream in the past 10 years – measurement of water flow (both before the stream enters the karst underground system and after it re-emerges on the surface), comparison with historical data, and analysis of several water characteristics at each place.
- Reaction of freshwater invertebrates to the changes in the water course and the drying out of the stream in recent years.
- Comparison of the characteristics of habitats at similar altitudes at different slopes of the same deep valley (different levels of sunlight exposure), observation of the changes in habitat distribution due to the changing (micro)climate.

The students' presentation of their research findings is perceived as the cognitive peak of the Program. The fact that the collected data are shared with the Moravian Karst Conservation Administration and the Czech Hydrometeorological Institute is an important motivation factor. The emotional peak is about to happen after dark. The students play a game – they walk outdoors in the dark with candles symbolizing their lives, acquire certain personal qualities, and help each other to define their own personal mission to help the world (see Fig. 14.5). The day ends with singing and chatting around a campfire.

Fig. 14.4 Assessing the biodiversity of a habitat. Photo: Jakub Pejcal

Fig. 14.5 What personal qualities do I need to help the Earth? (Photo: Jakub Pejcal)

Day 5

The students experience three concluding activities. Two outdoor activities (caving and abseiling) follow up on the students' personal commitments from the previous day. They are framed as empowerment activities, not just adrenaline fun. Another activity is an educational trail about the Moravian Karst full of funny mistakes that the students should uncover in the panels. This is a lighthearted review of the knowledge gathered during the Program. Before departure, the students also fill in feedback forms, recalling their experience throughout the Program.

14.5 Experience and Evaluation

In 2015, the Program was analyzed by an external evaluator (Cincera et al., 2017). The evaluation focused on the impact of the Program on students' understanding of the nature of science. Before and after the Program, the student participants were asked to provide their answer to one question: What does it mean to study something scientifically? (Cronje et al., 2011). Their answers were coded and categorized in a pre-test and a post-test. The results were compared with a control group of students who did not participate in the Program.

The results were remarkable. While the level of understanding of the nature of science did not change significantly in the control group, we found a significant increase in positive responses in the Program participants' group in comparison with the situation before the Program. The difference was considerably strong.

The shift in understanding was obvious also from the qualitative analyses of the students' responses. For example, before the Program, according to one of the students (18), to study something scientifically was.

> *seeing with your own eyes, experimenting, getting data on the basis of your own investigation.*

After the program, her understanding had remarkably developed:

> *To start with organizing your ideas about what you want to study, to evaluate it from various points of view, to check and describe the applied procedures so that they could be repeated by someone else.*

Another girl (16) switched from the original rather simplistic understanding, *"to observe an investigated subject using a microscope or another tool,"* to a more elaborated description:

> *When I want to study something scientifically, I must start with finding information about the subject. I will ask a question I would like to find an answer to. Then I will apply my knowledge in observing the research subject. Finally, I will compare my results with the information.*

In both cases, we can see the Program's clearly positive effect on the development of the students' understanding of the nature of science. Based on this, we may assess the Field Ecology Program as a successful program. Since its inception, the Program has become very popular among secondary schools in the region. Nowadays, the center draws on the experience gathered from more than one hundred observations of the Program and plans to continue the Program in the future.

14.6 Conclusion

Both climate-skepticism and the anti-vax movement seem to be connected with a low level of trust in science. As we argued, one of the reasons may be the low level of scientific literacy in the society, namely, the low level of understanding of how science works.

Outdoor field study programs may help to fill the knowledge and skills gaps. As we could see, a sound program can dramatically improve students' scientific understanding in a relatively short time. The combination of the outdoor settings, allowing direct interaction with the investigated phenomenon, and the applied instructional approach may explain the effectiveness of the Field Ecology Program. Based on this, the development of scientific understanding among students may be one of the crucial contributions of outdoor environmental education, defining its role in a contemporary society facing many challenges.

Acknowledgments The chapter has received support from the project "Výzvy udržitelné společnosti optikou humanitních a sociálních věd" [The Challenges of a Sustainable Society from the Perspective of the Humanities and Social Sciences] (MUNI/A/1460/2021).

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Chapter 15
The Maple Ridge Environmental School a Case Study: Ten Years as an Outdoor Public Elementary School and What We Think We Know Now

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15.1 Opening, a Hopeful Glimpse

It is leaning into fall here on the west coast of Canada and although the cliché tends to have the world preparing for sleep there is also a fecundity of activity and possibility that belies this prospect of a quiet cozy winter. Mushrooms are popping out everywhere, murmurations of pine siskins (and other feathered beings) are scurrying to and fro, gabbling amongst themselves full of well met energy and adventures to come, and the rivers are filling (less now than they once did) with salmon returning from distant voyages and populating the fresh waters, and lands around, with food and the next generation of silver hope.

And, of course there is the water, creeks are speaking in their loudest voices of the year, the forest, after the season of dry discomfort, is drinking in its fill, and the nearby ocean has been turned upside down as it rains down on all and sundry. But it is Salmon, or the lack thereof, that is the teacher today. Two students, who are now in grade six and have grown up in this school without walls are anxiously scanning the river for that first splash, or silvered flash of a returning coho. Over the last 7 cycles of fall they have fished, watched, pondered, dissected, admired, and connected to Salmon. It is not school (yeah pun intended!) without them and the sense of sadness is palpable as they discuss the disappearance. One student notes that this loss of salmon is not just for them (ie. salmon and children) but for the place itself. In fact, the other responds, "without Salmon, Orca can no longer be Orca and Kwantlen (one of the local Indigenous First Nations) can't be Kwantlen."

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_15

In that moment ten years into this challenging school creation project the point appears. Justice, interconnectedness, rights, identity are all embedded and lived into. For to understand how Water, Salmon, Orca, and Kwantlen are connected is to enact the direction this school thinks the culture must go. A moment worth noting … ten years of work.

15.2 Introduction, the Maple Ridge Environmental School Project

In 2010 concerned researchers, educators, and other allies met to discuss educational change. These discussions led to the determination that the required change needed to be radical, theory-driven, and well beyond simple tinkering with a very un-green educational system. Formation of a unique, quite radical, yet public, school was proposed with the underlying intention of creating an environment where the natural world and its denizens were much more present in the educational process, and where the accompanying research sought to determine how, or indeed whether, the prevailing culture of consumption, anthropocentrism, human elitism, and alienation from the natural world could be transformed.

While the journey towards the creation and opening of the Maple Ridge Environmental School in 2011 is necessarily a long story,[1] for our present purposes, the school successfully opened with specific aims of having no buildings, conducting all learning outdoors, understanding that the natural world would be part of the teaching faculty, and actively questioning every assumption of the mainstream approach to education. While this was, and is, an audacious project to say the least – and isn't audacity what is required now – it successfully remains a public school within a Canadian school district. As of January 2022, it has 113 students (aged four to fifteen), 6 full-time teachers, one teacher in a support role, six educational assistants, a principal, and a waiting list of almost 100. And, unsurprisingly, a lot of research (Blenkinsop & Kuchta, in press; Blenkinsop, 2012, 2013, 2014; Blenkinsop & Piersol 2013; Blenkinsop et al., 2016b, 2018, 2019, 2022) and even a research methodology that seeks to include, as co-researcher, the more-than-human (Blenkinsop et al., 2016a).[2]

Ten years after its inception, the three authors – all of whom played significant roles in its development – gathered to discuss the project, in the time-honoured spirit of recorded research dialogues. What is it we think we know now about these parallel projects of ecologizing education and changing culture? – was our driving question. And our, as yet incomplete and over simplified answers, appear in what follows. We have chosen to frame our exposition around three central themes:

[1] For more on the school and the story see: https://es.sd42.ca/

[2] Should note that this is simply a small sampling to give the reader a taste of the diversity of conversations the work at the school has influenced.

transformations, traumas, and teachers, because over the course of our discussions these were concepts we kept returning to and revolving around. We have also tried to offer the reader vignettes, windows into the goings on at the school, in order to help the explorations, to engage with and honour multiple voices and beings beyond ourselves, and to remind the reader that this is but a wee brush with an incredibly complex, interesting, frustrating, and life-changing decade, and more, of our lives.

15.3 Transformations: "Why Does it Have to Be So Brutally Slow?"

It is a sunny early summer day and a small group of us are sitting in the grass under a couple of flowering crab-apples discussing all things public education. We are just steps from the faculty offices but perhaps this move outside the institution has made us more radical, more critical, more willing to dream. Or perhaps it is because time is passing and change is needed not only to schooling but also to our mainstream Canadian relationship with the natural world. Or perhaps, and in conjunction with, it is because, in this place, we can't just ignore the natural world and it is quietly, gently telling us to wise-up, to listen carefully, and with its help, to imagine at a larger scale. It is in this moment of gathering commitment to try to "change education all the way down" [8] and to embarking on "an experimental" journey in schooling to determine whether or not mainstream culture -- the one that assumes instrumentalism, anthropocentrism, human elitism, resourcism, and ongoing consumption -- could be changed while still remaining within the auspices of the public system. Before committing and beginning the more mundane but necessary processes of building community, training teachers, getting funding, finding district approval, making the vision concrete, etc. the group held the idea of transformation for a moment. What does it mean to take on the challenge of cultural change? How far were we willing to go? A quiet "all the way" appeared rising up on the breeze and ruffling the new blossoms. Maybe a breath of hope offered to the next generations of apples and pollinators. And maybe, just maybe, kids. Little did we know that more than ten years later we would still be subsumed by the challenge to change, immersed in the complexity of transformation.

Right from the beginning we understood this project to be one of cultural change. The reasons for this arose first from our own experiences as outdoor, environmental, and experiential educators. Years spent focusing on building connections and changing behaviours only to recognize, with a sinking sense of unease, that there appeared to be little to no change happening in the larger culture. Consumption was rising, biodiversity was falling, and the politics of schooling was unchanged. The second reason for our focus on transformation came from our explorations of various literatures (e.g. eco-feminism, critical theory, Indigenous scholarship, and various activisms) which were naming culture, variously positioned as patriarchal, white and settler supremacist, neo-liberal, anthropocentric and anti-ecological, etc., as being

problematic right down to its ontological, cosmological, axiological, and epistemological core.

This commitment to cultural change led us to our next decision, to focus on creating a whole school. Our thinking at the time, which still bears fruit, was that a whole school might be both large enough and detachable from the system enough such that it could form its own culture. With a whole school we wouldn't have the challenges of the individual classroom educator who is constantly having to respond to the vagaries of the larger institution and we might be able to set a boundary, physically and strategically, around the school such that we could work towards different ways of enacting, even performing, the processes of teaching and learning. Processes which we conceptualized, in conjunction with the larger community, both human and more-than-human, as being more ecologically and socially just. The latter was not simply an adendum for there was a clear sense amongst the founders that we did not want to fall into either the romantic traditions of outdoor education or ignore the important critiques of white environmentalism that can focus on birds, bears, and bees to the exclusion of issues of gender, race, colonization, heteronomativity, ageism, ableism, etc. For us, the parallels (e.g. creation of binaries, use of violence to sustain hierarchies, voiceless othering, etc.) meant working across justice issues as potential allies, advocates, and activists (Blenkinsop et al., 2016b, 2018).

And after ten years, what do we know? First, this work is incredibly hard, deeply complex, and glacially, frustratingly slow. Early on we recognized two important components to this cultural change work. That it involved education all the way down (Blenkinsop et al., 2016b). That is that we were teaching students, parents and care-givers, community members, and ourselves all the time. And second, that one needed to constantly be on one's toes. Otherwise it was easy to succumb to the outside pressure to conform or take the easy, more habitual way. More significantly this also meant locating, being aware of, and potentially opening up one's own blind spots after lives immersed in an environmentally and socially problematic culture. Frustratingly, this process was, and continues to be, never ending for as one layer was exposed, acknowledged, responded to, and removed or reworked the next simply rose up to take its place. Like rocks rising up in the wheat field after a winter's cold. We might, for instance, begin to push against our own tendencies towards anthropocentrism by prioritizing nature as teacher only to realize that this meant undoing human teacher as expert, rethinking our concepts of voice and language, responding to cultural concepts of scarce and linear time, and on it goes.

In order to do this well, or at least try to keep us on track and honest with the work, we found that it was useful, necessary even, to hold space for diversity. Often with a focus on those who tend to be marginalized in mainstream education. We sought out and built relationships with Elders and the local Indigenous First Nations so that the school became a place that honoured and welcomed their participation. We also found ways to involve community builders, folks whose expertise is in

helping communities to bring to the surface their challenges and inconsistencies. To further this we worked with a core group of talented folks who became a kind of hearth, heart, and conscience for the project/community. Lastly, in order to avoid 'resting on our laurels' of partial change, which was a common impulse in the entire school community, we tried to hold space for what we came to think of as a kind of trickster energy. Often coming from the community these were the voices of dissent, of challenge, of resistance, of other possibilities that allowed the community to continue to question and expand or change (note: we are explicitly avoiding the linear concept of growth metaphors here).

In our experience, there was definitely a desire in the community to both stop changing, find the traditions, nail down what the school was and how things happen therein and to create of narrative of difference from the norm. This was helpful in terms of building community but it also became challenging as we sought to continue to change with the next set of rocks that the frost was surfacing. And, this also became a challenge in the larger educational community beyond the school as that world quickly settled into an 'oh yeah, the environmental school, they do X' simplicity. This worked both as an easy dismissal (e.g. when the X equalled "play in the dirt and run around outside") or a pigeon-holing (e.g. when X equalled "great place for really challenging kids"). It is also meant that there were few opportunities to cross pollinate, to work with ally type teachers in the mainstream, or even just influence the way things were done across the school district. And, it meant that students would arrive at our 'doors' for reasons that had little or nothing to do with the ecovision. We should note, that this move by the mainstream to position the school and make it voiceless and unable to respond resembles often employed tools by the systems of power.

Two final quick points we would like make about our experiences with regard to educational, school, cultural transformation. First, that it is a process. For us, there was no single tipping point, no aha moment, no epiphany as it were where everything changed and we had left the old behind while dancing off into the new. The process continues as new complexities and challenges appear and, interestingly, as previous decisions, thought to be good ones, have to reopened and reconsidered. And second, that transformation involves pain. Yes, it can be wonderful and celebratory along the way, and there is a real sense of belonging and even family (in a good way) at the school but that it is hard work undoing oneself, recognizing one's privileges, changing old habits, seeing the mistakes done and violences inflicted, in some cases, for most of one's life and with little recognition, and finding ways to respond, to name these truths, and to maybe even seek foregiveness or reconciliation. For many in our community, ecologizing education has meant confronting ourselves, changing lifestyles and friendship communities, and encountering deep emotions of regret, sadness, anger, and even helplessness. In our experience, transformation, of the cultural change kind, might not even be happening if there isn't any pain.

15.4 Traumas: Building Relationships While Naming the Trouble

One of the first agenda items for any new school, as determined by the district, is to create a parent advisory committee. For us, this was not a comfortable priority. We were trying to build community, to do things differently, to flatten the hierarchies of admin/teacher, teacher/student, teacher/care-giver, human/more-than-human and, as such, were suspicious of the seeming artifice of equality that PACs often represent and their inability to contribute in genuinely meaningful ways to the operation of the school. Yet, this seemingly banal "job" of creating a PAC actually was a creative impetus for us. We already knew that we wanted to build community and that that work was already unearthing traumas, suspicions, uncertainties, and confusions. We also knew that it would be really easy for us to slide away from the goal of change and that we needed wisdom and challenge. A group of beings who might have, as their main mandate, care for the community and an eye on change. For us this included the earth and its denizens. The result, in keeping with a long history of the role of fire for warmth, for reflection, for comradery, was the creation of the hearthkeepers. Bringing together of heart and earth while invoking the above was, for us, a gift. It still exists today.

Some of the work we were required to do as part of an ecologizing school seeking to change culture was quite expected. We knew, for instance, that we were going to have to think about pedagogy and teaching parents and care-givers that this school was going to look quite different from their own experiences but that learning was actually happening. One thing we weren't ready for was how much we were going to have to deal with trauma if change was going to have any chance of happening (Ho & Block, 2016). To be clear, we knew that trauma exists and many of us had some experience with working with students and trauma in quite thoughtful trauma-informed and responsive environments. What we weren't ready for were the layers of trauma that existed. Parents and care-givers opening-up and unearthing their own traumas, in particular those related to their schooling experiences. There were, for us, a surprising number of adults involved in the community who, with time and the building of relationship, began to share their own experiences of trauma related to schooling (Ho & Block, 2016). It could be as a result of the naming and shaming of their academic "insufficiencies", or the violences perpetrated upon them by other students and teachers, or the ostracisms that resulted from being different, or even the failure of their own parents/care-givers and teachers to respond to their needs, hear their voices, care for them as human beings. The stories that we encountered were profound and quite devastating, particularly for those of us who have worked in public education for a long time. To conceptualize, position, and understand school as a traumatic place, and possibly not just for the few, is to force one into questioning much of what we have done and continue to do. But this conversation didn't start right away. It grew out of our intentional work to focus on relationship and relationality as key pillars in the school. Relationship not just with humans but also with the community and the more-than-human world and relationality as a

way of being, even at the ontological level, in the world. And this work led us to what we began to think of as a third form of trauma related to the suffering one experiences as a result of being first separated from the natural world, experiencing loss, and then having to witness, feel the pain and sadness of its ongoing destruction, and then coming to realize, sit in that uncomfortable space of privilege, that one has benefitted from that same destruction. But maybe we should back up and fill in these layers.

15.4.1 Layer 1: Trauma-Informed Practice

Even before the school opened, as we met with interested parents/caregivers, it became clear that not all were being drawn in because of the ecological, social justice, community-based, outdoor and place-based orientations. We met many families who felt that the more mainstream school system had let them down for myriad reasons. Kids' needs weren't being met, students weren't learning, classrooms weren't safe, etc. And as a result, some of these families were simply willing to try anything. It didn't really matter. This meant that not only were the teachers going to be working in a, for them, unusual environment, the outdoors, with an unusual mandate, change education, but they were involved with students who were bringing with them a diversity of needs and who also had little experience of "learning" differently in the outdoors. Importantly, this change of venue and structure, both physical and conceptual, thrust us into re-considering the skills a teacher might need and the pedagogical practices necessary to make the whole project work. We will explore this more explicitly in the next section but here the note is that it quickly became apparent that in this outdoor setting with an explicit focus on building relationships teachers needed to have a wider range of abilities. Both in the creation of relationship and in the response to diverse needs including trauma-informed practices.

15.4.2 Layer 2: School as Traumatizing

Part of our work, given our commitments to building relationship and community was to find ways to involve families in the everyday ongoings of the school. Early on we chose to have an 'open-door policy' of sorts. Hard not to when there are no walls but the point was that all adults could be teachers. Parents/caregivers were teachers too, important parts in their children's learning. We also saw building relationships as being a necessary part of any cultural change because change needs to be supported and even sustained by the community itself. Finally, we wanted to invite the adults into the relationship building process with the natural world. This was because it is important to environmental change and because their children were deeply involved and having parents/caregivers experientially engaged might

help with building support for the project and potentially mitigate the more general cultural response of dismissal when children start talking about the importance of nature, about talking to and caring for trees, and even about nature as teacher. All of this meant long evenings dedicated to adult education, to bringing them into the discussions, ideas, imaginings, and challenges we were wrestling with and both getting help and educating at the same time.

As we worked on this it first became quite clear that many parents/grandparents/caregivers did not see themselves as teachers, or having the skills to teach, or even having anything worth teaching. This was quite shocking and so there was a lot of time spent in working with adults to support them into finding a voice and way of being that might allow them to see themselves as teachers for their own children but also in finding ways to help them to see themselves as, at its deepest, being of worth. Eventually we found success in this process and there are many adults contributing to learning and the school community sees learning as a shared endeavour that goes way beyond the boundaries of the school and the school day. It was in this process of building community that we began to hear another layer of trauma. This time it was parents and care-givers giving voice to traumas related to their own schooling. Feelings of inadequacy affirmed by aggressive teachers, marginalizations and violences perpetrated by other students and by a system that seemingly didn't care or even sanctioned these things, deep insecurities created because particular 'required' ways of being and doing were out of reach and people found themselves labelled and shunned. One result of these discoveries was that we were challenged to find ways to support these adults into creating different narratives for themselves with respect to school, at least this school. This required a set of adult educational skills; community building, holding space, facilitating more vulnerable discussions, and narrative and identity change work that many outdoor educators might recognize but that are not obviously part of the 'toolbox' of the average public school educator.

15.4.3 Layer 3: Nature as Colonized and We Are the Colonizers

The third layer of trauma discussion that we began to encounter over time at the school is double-pronged. As we asked the human teachers to begin to give up some of their control, as experts, as curricular designers, as knowers of the desired outcomes, and to live into a pedagogy and curriculum that was more relational and emergent one of the key pushes was to involve the natural world not only as the place of learning, or the content for learning, but as an active, agential, having something to offer teacher. This animated concept of nature as co-teacher took quite of bit of getting used, at the very least humans had to be quiet for longer periods of time than many had ever imagined, but as it began to become part of our practices we saw different ways of being in the world emerge, in wonderful ways, from the children. There was space for children to talk to and listen to trees, unexpected

encounters might lead to diverse sets of questioning and learnings both across and beyond the 'expected' outcomes, and, at a theoretical level a much better understanding of how particular ontological and epistemological assumptions lead to specific knowings, questionings, understandings, and requirements for being. For if a tree can be teacher and interlocutor then it is hard to position it as an inert other and almost impossible to assume that only humans know and communicate. Yet, in this move to recognize nature's animacy children at the school (and maybe their parents and caregivers) began to feel (emotionally and sensorily) differently about these places they were immersed in and encountering on a daily basis. It also meant that they were in an environment where it was alright to feel and even name these usually ignored or under-represented emotional responses. At the school sadness and frustration at the wanton cutting of a tree, or the accidental killing of a frog, or the removal of all the salamander homes in the immediate vicinity were felt, at least by some, quite deeply. For these were well-known friends and companions that were suffering at the whim of the unconsidered. And it was here that we began to come up against the larger culture beyond the school.

Students and their parents/caregivers began to report on how they were shifting who they were and what they talked about between school and other-than-school situations. They noticed how things that were held dear within the school were unseen, ignored, and even ridiculed both subtly and overtly in the culture at large. In response we began to consider ways to protect these nascent more relational ontologies, to have them flourish, while at the same equipping students with the tools for self-protection. In some ways this became a kind of eco-cultural street smarting. This is also where we began to find it important to question the developmental models upon which at least Canadian public education is built. What does development look like if the aim is not an autonomous, self-creating, citizen, adult but is in fact a more relationally interconnected, intra-active, gathering of concresences, being? The answer is still emerging but well worth considering. But before we end this section, the other prong of this third layer of trauma.

As the community became more connected to the more-than-human and began to shift into an understanding that sees myriad others as being teachers, as having agency, as deserving of respect and rights it began to dawn, quite inescapably, on many that there is a way of being in the world, an orientation towards the natural world, that is colonial (Blenkinson et al., 2016a) and that all of the humans in the school community benefitted from. The natural world is colonized to privilege some humans and this is hard to ignore in a mostly middle-class bedroom community in Canada's west coast. And, this was, and continues to be, a difficult proposition to be aware of. For the school it meant both naming nature as colonized, finding ways to bear witness to this and hold that truth present while also seeking ways to respond. It was in this work that we looked towards feminist and gender theorists, Indigenous scholars, Elders, activists, and BIPOC academics and community workers to see how we might make sense of ourselves as advocates and activists who were seeking to be allies. This was an important move for many because it is quite unusual for teachers to think of themselves as activists. But once we understood that our options

were to either aid and abet the colonial *status quo* or to be activists the decision seemed a whole lot easier.

15.5 Teachers: Undoing and Redoing

Fall is passing but some Chum have finally returned. Leaves fall from the trees and float down the river bumping up against a newly dead Salmon. Pulled open by a bear the flesh is alive with maggots, turning what Bear and Fox are no longer needing into the next generation of flies and making rich previously fish bound minerals available to the rest of the ecosystem. On the trail to the river, human learners step around the carcass as they move toward the planned activity. One student accidentally trips on Salmon and notices the motion of the feeding maggots inside the dead skin. Salmon rippling at its core. Teacher continues on towards the planned activity. It was a great planned activity: observation, recording, counting, averaging, and then some poetry. Upon gathering, Student asks about what was happening to Salmon. Teacher says, "We will look at it later." Later, the Maggots, and the fecund vibrancy of the moment, are gone.

In many of our already cited papers we have explored this question of who the teacher is, needs to be, becomes in this eco-schooling, ecologizing education, change context. We have suggested necessary skills, added partners in parents/caregivers, community members, and, most importantly, the natural world, pointed towards some of the key challenges and even advocated for educational examples where we think there is a range of pedagogical styles that might be drawn from. But all that being said we are going to re-enter this discussion using different language and from the vantage point of ten years of school experience plus myriad graduate teacher education programs. We do this because the educator/s is/are important in learning and because it is incredibly easy to get in the way of change and a more equitable and ecological form thereof. Our experience suggests that there are lots of blind-spots, where the unjust and non-ecological are simply part of the system and its normal practices. And that there is a limited range of imaginative possibility that would assist in making these spots more visible and act as potential replacements for the "tried and true". This includes not only the assumptions of practice and the contents of curriculum but also things like teacher intuition and the whys and wheres of learning which leads into the more seemingly foundational concepts such as what knowledge is, where it is located, how humans develop, and into what (or whom)?

So, what happens to teacher in this process of undoing and redoing? One of the first, and maybe most significant, components of the undoing work was to recognize the anthropocentrism, and by extension the focus on control, of what tends to be the 'performance' of teacher in Canadian public schools. As we considered this discussion, it became clear that part of this is implicit to the culture. This desire to make humans the most important beings, the process of separating humans from the rest of nature, the colonial orientation that positions the other as less-than, not worth

hearing from, and having little to offer. But as these ideas became explicit in our more theoretical explorations the same kinds of themes were repeating themselves in the 'classroom.' Human teachers are in control, they are the centre of the learning, they are either the experts themselves or the gateway to the expertise and as such the natural world, and children and other adults for that matter, are rendered mute, without having anything to offer. This then means that classrooms can, and in fact should, be separated from both community and the more-than-human for they have little to offer and have a tendency to take the learners' attentions away from the important outcomes. This also became a much more explicit conversation on how time, understood as both linear and scarce, coupled with a massive amount of 'to be applied sequentially' knowing pushes teachers, almost necessarily, into these controlling positions. As such, the school tried, and continues to do so, to open space for the emergent, the spontaneous, and even just other learnings to appear.

At a philosophical level there are the reverberations here of larger concepts such as progress and teleology which only furthers a sense of hierarchy, adults are better than children (they have progressed farther after all), educated adults are better than the less educated, and, of course, humans are better than the rest. Thus, part of our work to undo teacher was to find ways to make apparent cultural assumptions such as human control and elitism visible within the practice of teaching. Part of this was done at the theoretical level but much of it was taking place at the more mundane ground level.

For example, we began to carefully explore the language we were using and the assumptions that language supported. The most obvious at this point was the move to naming nature as a co-teacher and taking that seriously. But this also then meant we needed to think differently about our ideas of what language is and who communicates. This in turn leads into tiny little linguistic crevices such as metaphors, sayings, and clichés. At one point there was an ongoing project to re-write anti-ecological sayings with more eco-friendly ones (e.g. killing two birds with one stone becomes feeding two birds with one handful of grain). Or, in teaching how English works, elementary educators began to shift how they discussed nouns. For does "person, place, or thing" really do justice to those salmon nearby? Or, discussion about whether or not talking about a "family tree" does justice to either family or trees and what are the limitations of this kind of metaphor.

Ultimately this work of constantly being critically aware and trying to rewrite, rethink, reword one's ways of being teacher was challenging and, at times, rewarding. Particularly when we noticed students having the kinds of thoughts and encounters described in the opening vignette. And yet, it led us to think quite differently about teacher and teaching. We asked educators to see themselves as activists and advocates, we pushed them to release some of the centralized control and expertise/professional metaphors in order to leave space for the natural world and other ways of learning and being to emerge and be engaged. We also pushed the teachers to become much more critical of their practices, to ask about and notice culturally problematic framings, and to begin to see themselves as cultural change workers and identity change facilitators. This in turn required that they look beyond their

teacher education training and gather educational skills such as community builder, adult educator, group facilitator, space holder, trauma mediator, more-than-human co-teacher, and critical thinker/activist from other spheres, including outdoor education into their toolboxes.

15.6 Conclusion

As the reader might guess it is hard to write any kind of compelling conclusion for a project that is still ongoing and incomplete but we have chosen to write to outdoor educators. To posit, given the above discussion, that outdoor educators might have ways and skills to contribute to education writ-large in this time of eco-social crisis. And, maybe to challenge the field, however you think of it, to step up to the plate and position itself as activist, as part of the process of cultural change that we think is necessary. Given the three T's, human educators are going to have to know how to allow for, help build, and work with relationship. Which means being able to facilitate groups, ask good questions, lean into the uncomfortable, see themselves as community builders, and act as advocates for an agential, animate, and vital world. It also means that we are going to have to be able to work with diversity, think and practice criticality, be comfortable with change, uncertainty, risk, and not knowing, and be skilled in recognizing and offering trauma informed practice throughout the community. It also, obviously, means being comfortable working outdoors. Caring for safety, holding space for learners in places without bells, walls, desks, and tests, responding to the spontaneous and emergent while also noting and even documenting the learning. All of which are often part and parcel of being outdoor educators. But finally, maybe most importantly, and still to be learned more deeply by most educators regardless of their stripe, humility and the ability to be silent and listen to the myriad others that this culture of modernity tends to ignore.

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Chapter 16
Embracing Nature, Meaningful Experiences for Teaching and Learning Endeavors: Lessons from the Northern Gulf of California

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16.1 Introduction

The CEDO Intercultural Center for the Study of Deserts and Oceans (CEDO) is an active conservation, research, and education center that has been informing, inspiring, and empowering stewards of the Northern and Upper Gulf of California for more than 43 years. CEDO is a unique collaboration between Mexican and U.S. not-for-profit organizations inspired by a shared vision, mission, and development of strategic programs that pool resources to offer realistic environmental and community-based solutions to tackle local and regional problems. Motivated by recognition and respect, its operations have drawn inspiration from the cultural, socio-economic, and biological interconnections between the U.S. and Mexico.

Since CEDO first opened its doors in 1980, Outdoor Environmental Education (OEE) has been a key element in achieving its evolving mission to foster vibrant communities and resilient ecosystems in the Northern-Upper Gulf of California and the Sonoran Desert by integrating people, knowledge, and solutions.

Located in the extraordinary natural region where the Sonoran Desert meets the Sea of Cortez, CEDO has provided first-hand experiences in nature to different audiences and guided them to appreciate its beauty, understand its importance, increase respect, and use nature in sustainable ways.

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_16

The outstanding biodiversity has been the perfect setting for a long tradition of OEE where fishing, tourism, research, education, and its complex nexus frame the scenario for the long tradition and deep results of CEDO's work presented in this chapter.

We invite you to explore these lessons learned in more than four decades of work and the long-lasting results achieved under the biocultural and binational environments where CEDO works.

16.2 The Northern Gulf of California: The Perfect Setting for Outdoor Education

The Gulf of California in northwestern Mexico, also known as the Sea of Cortez, is considered one of the five most productive and biodiverse marine ecosystems on the planet; it is recognized worldwide for its biological richness, its large number of endemics, the productivity of its waters and its scenic beauty (Aburto-Oropeza & López-Sagástegui, 2006).

The Northern Gulf of California is a distinct biogeographic zone extending from the Colorado River Delta to the midriff islands. It is known for its shallow waters and physically extreme conditions including tidal range, salinity, and water temperatures (Brusca et al., 2005). Year-round upwelling replenishes surface nutrients and stimulates high productivity (Alvarez-Borrego & Lara-Lara, 1991). Over 15% of Mexico's fishery production historically came from the Northern Gulf of California (Cudney-Bueno & Turk-Boyer, 1998).

Nearly half of the species diversity in the entire Gulf of California is found in the Northern region (Brusca et al., 2005), its great variety of coastal and marine habitats providing important breeding, spawning, and nursery places for many commercial and non-commercial species. Its waters are home to endemic and endangered species such as the vaquita marina (*Phocoena sinus*), a small porpoise that today is considered the most imperiled marine cetacean in the world, and the totoaba (*Totoaba macdonaldi*), a fish which has been illegally exploited by unregulated, non-selective fishing methods that are also the main threat to the vaquita porpoise (Rojas-Bracho & Taylor, 1999).

The coastal landscape is characterized by negative estuaries with vast tidal wetlands, intertidal and subtidal beach rock, basalt and granite platform reefs, and sandy beaches (Turk-Boyer et al., 2014a). Offshore, the San Jorge Island archipelago is one of the most important California sea lion rookeries (Szteren et al., 2006) and an important nesting place for marine birds. Populations of cetaceans and other pelagic megafauna such as great white sharks, whale sharks and sea turtles have found favorable conditions to live here. Scientific studies on species distribution, trophic ecology (food webs), and connectivity (larval dispersal) have helped to define a unique corridor ecosystem along the Sonora coast from Puerto Peñasco to Puerto Lobos (Fig. 16.1) (Intercultural Center for the Study of Deserts and Oceans, 2019).

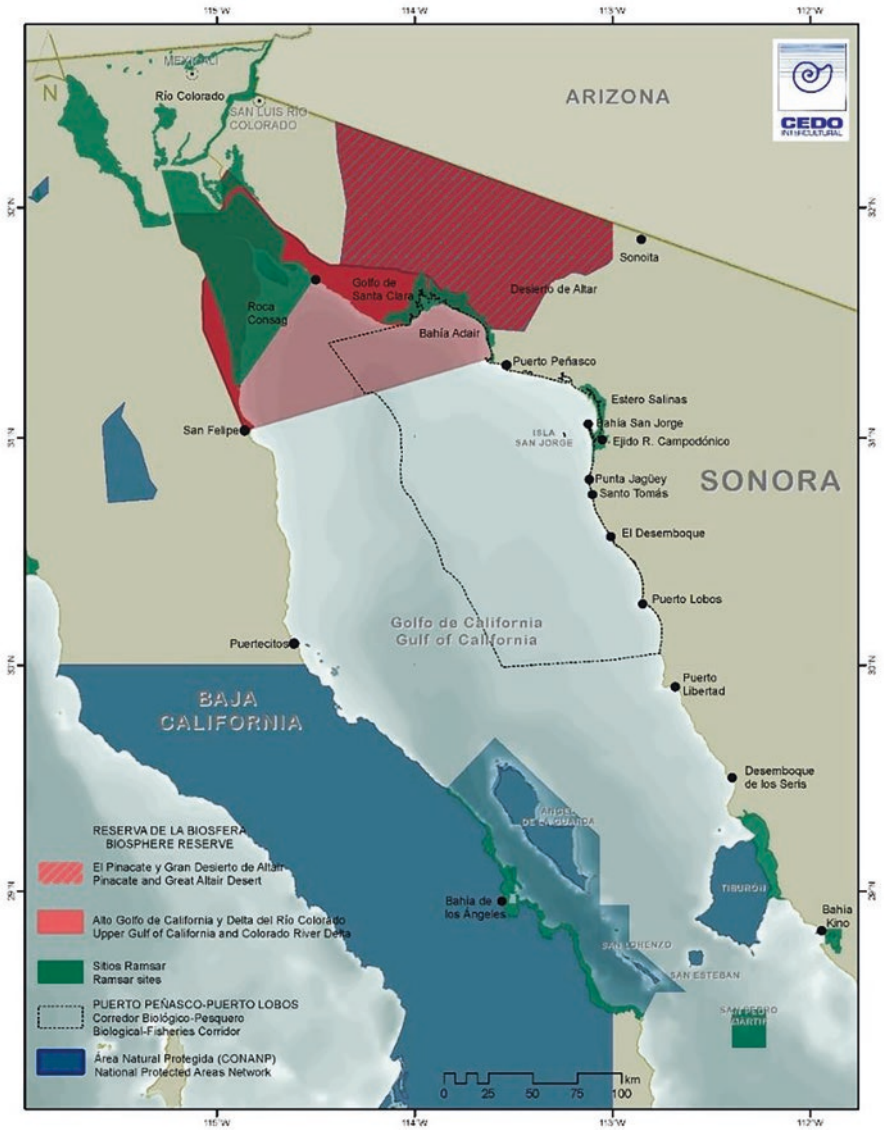


Fig. 16.1 Map of the scope of work of CEDO, which shows the ecoregions of the Northern Gulf of California and the Sonoran Desert, including the Natural Protected Areas, wetlands protected under the Ramsar Convention, and coastal communities. (Credit: CEDO Archives)

The Northern Gulf of California is also the marine gateway to the Sonoran Desert, the most diverse desert in North America (Narro & Gibert, 2014). Species such as the pronghorn antelope (*Antilocapra americana sonorensis*), the flat-tailed horned lizard (*Phrynosoma mcalli*), and the desert pupfish (*Cyprinodon eremus*) are found here, as are the sand dunes of the Gran Desierto de Altar, the extensive fields of columnar cactus and xerophytic scrubs, the volcanic region of El Pinacate and its riparian zones. This desert is tri-national, shared by Mexico, the United States of America (U.S.), and the Tohono O'odham Nation as well as other indigenous communities such as the Cucapá and Comcáac.

The richness of the Northern Gulf of California region has been recognized by the establishment of three Natural Protected Areas under the Mexican legal framework: The Upper Gulf of California and Colorado River Delta Biosphere Reserve and The Pinacate and Gran Desierto de Altar Biosphere Reserve, both decreed in 1993, and The Gulf of California Islands Flora and Fauna Protection Area, established in 1978. These protected areas are also recognized globally under the United Nations Man and the Biosphere Program and are considered World Natural and Cultural Heritage Sites by UNESCO. The area boasts Ramsar sites amongst them including Bahía Adair (site 1866),[1] Bahía San Jorge (site 1983),[2] and Agua Dulce (site 1813).[3]

16.3 The CEDO Intercultural Center for the Study of Deserts and Oceans: An Epicenter for Outdoor Education in the Northern Gulf of California

CEDO owns and operates an environmental resource center in Puerto Peñasco, Sonora and a liaison office in Tucson AZ. The campus includes a biological field station to host visiting classes and researchers, a thermally efficient "Earthship" with a library and a multi-use room, a visitor center with a gift shop, a Sonoran Desert botanical garden, two desert fish ponds for endemic freshwater fish of the Sonoyta river, and other educational exhibits including the first skeleton of a vaquita marina and our iconic fin whale skeleton that landmarks our campus (Fig. 16.2).

Field research and education for academic groups were among the first activities of the organization. Over time, the field station programs expanded to offer other OEE activities such as regional school programs, nature tourism, and hands-on citizen science projects to a variety of publics. CEDO also helped establish and develop management programs and environmental education components for the natural protected areas in the region.

[1] https://rsis.ramsar.org/es/ris/1866

[2] https://rsis.ramsar.org/es/ris/1983

[3] https://rsis.ramsar.org/es/ris/1813

Fig. 16.2 CEDO Campus at Puerto Peñasco, Sonora, Mexico. (Credit: Donovan Noriega)

Fig. 16.3 Bahía San Jorge Community Center and School of the Sea, at Ejido Rodolfo Campodónico, Caborca, Sonora, Mexico. (Credit: CEDO Archives)

Nowadays, CEDO is in the process of consolidating agreements to expand our work into local communities. As an example, in 2021, with the full participation of Ejido Rodolfo Campodónico and the Penmont Mining Company, we established the Bahía San Jorge Community Center and School of the Sea, providing a classroom with internet services and installing solar cookers and dehydrators, a community garden, and implemented a brand new program to provide clean water to the community of the Ejido (Fig. 16.3).

CEDO recognizes education as a fundamental tool for transforming people and society; its programs for coastal communities of the Northern Gulf are focused on building a culture of stewardship for people whose livelihoods are directly linked

to the sea. For children and youth, the programs are focused on sharing knowledge and appreciation of local ecosystems and analyzing ecosystem threats to search for solutions. CEDO's programming also includes capacity building, resource monitoring, conservation and management activities, as well as labor skills certification.

OEE uses an intersectional approach that supports our primary "Nature-based solutions" strategy that states that all the solutions for societal challenges can be found in nature where knowledgeable, experienced, nature-connected people are the change agents that support and act for nature, and people (https://nature-forall.global/home/).

During its long and diverse career in OEE, CEDO won Mexico's National Award for Environmental Education in 2009 and, in 2010, the Human Diversity Award for Field Science by the Organization for Biological Field Stations. However, our biggest accomplishment is the solid and deep relationships we have with the local coastal communities, authorities, and institutions.

Our goals and audiences have evolved and nowadays OEE activities are included in three areas: *Field Science Education, Conservation Education, and Citizen Science for Sustainable Management*. In this chapter, we present some of CEDO's most relevant OEE results in these areas.

16.4 Field Science Education

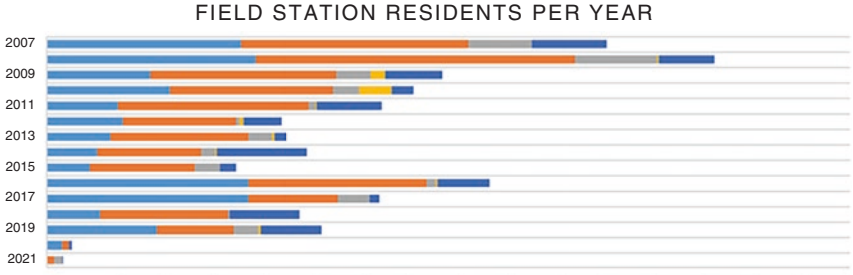
16.4.1 CEDO as a Field Station and Promoter of Field Academic Education

CEDO has continued a long tradition of field-based marine and desert science serving students and researchers from across the U.S. and Mexico in Puerto Peñasco, Sonora. Following a program initiated by the University of Arizona (UA) in the 1960s, CEDO continued as a field station at a new facility with a new direction beginning in 1980. By providing a place to spend the night and facilities to conduct research and education as well as key education and research programs, CEDO advanced in the understanding of the biogeophysical, ecological, and socioeconomic processes impacting the Northern Gulf of California.

CEDO's dramatic setting, supportive facilities, and inspiring OEE programs drew in professors and successive cohorts of students, numbering in the thousands. The many "academic lineages" associated with CEDO, students who became researchers who then brought their own students, speak to the power of seminal experiences in a natural setting (Fig. 16.4).

From the 1980s to date, CEDO's field station and education center received more than 175 institutions and organized groups with an average of 810 people per year, peaking in 1999 with 2378 residents. Between 2001 and 2021, the number of annual residents shifted dramatically due to different factors from the

Fig. 16.4 Researchers from Sonora, Arizona and California at CEDO's field station in the 1980s. Left to right: Susana Bojorquez Yensen, Nick Yensen, Rick Brusca, Lloyd Findley and CEDO Director Peggy Turk (1980–2019). (Credit: CEDO Archives)



	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
K-12	0	23	164	79	301	301	65	76	95	113	106	184	155	312	290
College	11	10	115	191	134	266	156	154	206	170	285	244	277	477	340
Researchers	12	0	36	3	47	14	37	21	35	4	11	39	52	123	94
Long-term	0	0	4	0	0	2	0	2	4	7	1	48	21	3	0
Non Academic	2	5	91	104	15	78	24	136	18	57	98	33	86	82	112

Fig. 16.5 CEDO's field station residents per category from 2007 to 2021. Data are shown as the number of residents per year

events of 9/11 to the global economic crisis of 2008, travel insecurity in Mexico, to the SARS-CoV-2 pandemic, which interrupted travel and economies on a global scale. Figure 16.5 shows field station behavior by resident category from 2007 to 2021.

In addition to residential academic programs, CEDO has also conducted a number of outreach programs with field education and participatory components for local communities, including a series of mini-courses in marine mammals, intertidal ecology, meteorology and recently adding other social science programs geared towards sustainable community development.

Despite the external factors affecting CEDO's visits, the field station has served students and researchers from Mexico and the U.S. for more than four decades. We look forward to continuing to introduce students, researchers and local communities to field experiences and to meet the challenges of adapting to climate change, water scarcity, and other challenges at the national and international levels mainly under a sustainable development approach.

16.4.2 NaturArte by CEDO: Ecotourism Experiences

NaturArte by CEDO was created to diversify local economies by connecting the day to day activities of the communities with residents and visitors while raising intercultural and environmental awareness and OEE.

NaturArte is positioned to respond to three market-driven dynamics: the demand by tourist groups seeking outdoor activities with CEDO, the rise of mass tourism in the region in a relatively short time causing increased pressures on the environment, and the need of the people of the community (direct users of natural resources) to diversify their economic activities.

In the beginning, NaturArte focused primarily on strengthening small oyster farming businesses in the estuaries of the Northern Gulf of California, particularly in the Morúa Estuary. The high scenic value has driven urban and tourism developments, marinas, and shrimp farms. Oyster cooperatives were trained to strengthen their businesses by improving infrastructure and customer service in their seaside restaurants, accessing local markets, learning business management practices, developing their English proficiency, and creating new ecotourism products. A successful example of these efforts is the "Cooperativa Única de Mujeres del Mar" where CEDO partnered with other organizations and the College of Fine Arts of the University of Arizona to improve the "El Barco" restaurant facilities by building a kitchen and a "palapa" and incorporating nature elements in their building to become a permanent exhibit for the biodiversity of the estuary for the more than 1000 visitors who come to the restaurant every year (Fig. 16.6). With the "Punta Roja Cooperative", CEDO developed the OEE "Oyster Experience" where interested people work as oyster farmers for a day to learn oyster biology, the hard work needed to bring a plate to their tables, and the stories behind the ladies in charge of the oyster farm and restaurant. A final activity is tasting the fruits of their labor (Fig. 16.7).

CEDO's ecotourism experiences have evolved and nowadays NaturArte offers 11 eco-adventures, including visiting the tidepools and the Pinacate craters–dunes–desert, San Jorge Island, and enjoying a set of experiences in the estuaries. All these experiences are now recognized as OEE programs (Fig. 16.8).

Fig. 16.6 Educational mural at El Barco Restaurant of the Cooperativa Única de Mujeres at Estero Morúa. (Credit: CEDO Archives)

Fig. 16.7 Oyster experience ecotour with Punta Roja Cooperative. (Credit: CEDO Archives)

From 2009 to 2021, CEDO conducted an average of 28 eco-adventure events per year, with an average of 145.2 total participants per year. In general, the tidepool explorations and kayaking in an estuary are the most popular OEE ecotourism experiences.

In 2007, the Universidad del Valle de México (UVM), in collaboration with the International Youth Foundation and the Sylvan/Laureate Foundation, awarded NaturArte the UVM award for "one of the best social impact projects", and in 2021 the Fundación Yves Rocher awarded the oyster farming project with the Tierra de Mujeres Prize.

Fig. 16.8 NaturArte eco-adventures catalog. (Credit: CEDO Archives)

16.5 Conservation Education

As conservation issues moved to the forefront of environmental concerns in the 90s, resulting in the establishment of the Upper Gulf and Pinacate Biosphere Reserves, CEDO began to intensify its community outreach education and involvement in conservation initiatives in Puerto Peñasco and other communities of the region. These initiatives ranged from community-wide participation in clean-up activities to multi-year programs for school children. From 1992 to 1994, the 41 schools of the Upper Gulf Reserve's three communities were taken to the field and participated in learning about vaquita, totoaba, and the Upper Gulf ecosystem. An evaluation of these programs highlighted the need for teacher training, and in 1998–1999 CEDO responded with a comprehensive, field-based training program and classroom curriculum for 75 teachers from the Reserve.

In this millennium, as conservation issues became more complex and heated, CEDO once again began to deliver programs directly to school children. We realized that the passion, experience, and commitment of CEDO's staff had a profound impact on inspiring the region's youth to meet new challenges. The contents and structure of these OEE programs were based on environmental problems identified, conservation needs, and survey input from teachers in these communities. The objectives were to share information on basic ecological concepts, increase appreciation, enjoyment, and respect for nature through direct experiences, and shape behavior by promoting responsible stewardship and shaping environmental spokespersons for the communities. Here we delve into a few of the programs with the most impact.

16.5.1 Youth Towards a Sustainable Northern Gulf of California

From 2005 to 2010, this environmental education program implemented by CEDO involved about 1000 fifth graders per year in 9 coastal communities in the state of Sonora (Turk-Boyer et al. 2014b). The program comprised a one-day session at CEDO's field station and one-day interpretive field excursion in a local wetland. Activities highlighted the concept of fishery management and action that could promote sustainable yield. Other activities focused on conserving wetlands as a means of promoting broad benefits to the human and other living inhabitants of the region (Fig. 16.9).

Fig. 16.9 Youth learning about the biodiversity, ecology, and environmental services of wetlands in the Northern Gulf of California. (Credit: Pia Mijares-Mastretta)

The short-term and long-term changes in perceptions, attitudes, and knowledge of the student participants were evaluated using surveys and The Environment Questionnaire (TEQ)[4] designed by Johnson and Manoli (2008). In addition to measuring knowledge, this questionnaire evaluates two dimensions of perceptions towards the environment: the "Preservation" (biocentric) and "Utilization" (anthropocentric) of values toward nature, which are subdivided into different factors (Table 16.1).

The study results show that this OEE program had an immediate and positive impact on the 5th graders with medium-term durability. Immediately after their participation in the OEE program, they had a significant increase ($p \leq 0.05$) in two of the TEQ Preservation environment perception factors: the intent to support and care for resources. Long-term changes in participants of the OEE program showed that they were less in favor of nature alteration (TEQ Utilization environment perception factor) ($p \leq 0.05$) than non-participants. In terms of knowledge acquired, children increased their correct answers in a survey by 48.7% after participating in the program, and two months later there was only a slight decrease of 2.3% (Fig. 16.10).

The first-hand experiences in nature have been one of the most important factors that sensitized students and increased their sense of place; 26.6% of the OEE participants considered the Morúa estuary (one of the local wetlands they explored) one of the most important places in the region to preserve (Fig. 16.11). Students also consider wetlands as places that make their communities unique and special and one

[4]The Environment Questionnaire was used with permission from the Earth Education Research and Evaluation Team from the College of Education at the University of Arizona.

Table 16.1 Perceptions towards the environment as measured by The Environment Questionnaire (TEQ)

Component	Factor	Sample item
Preservation	Intent of support	If I ever have extra money, I will give some to help protect nature.
	Care of resources	I always turn off the light when I do not need it anymore.
Utilization	Enjoyment of nature	I would love to visit an oasis in the desert to see birds flying
	Altering nature	Weeds should be killed because they take up space from plants we need.
	Human domination	People are supposed to rule over the rest of nature

Modified from Johnson and Manoli (2008)

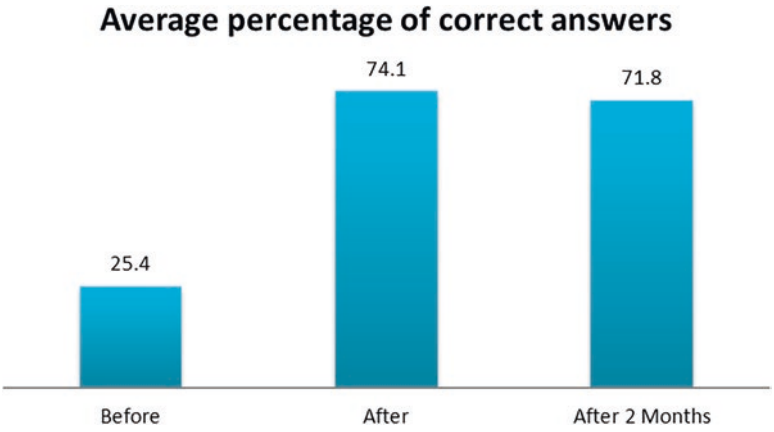


Fig. 16.10 Average percentage of correct answers for 5th graders in a knowledge test that was applied to them before (n = 373), immediately after (n = 331) and two months after (n = 291) their participation in the Youth Towards a Sustainable Northern Gulf OEE program

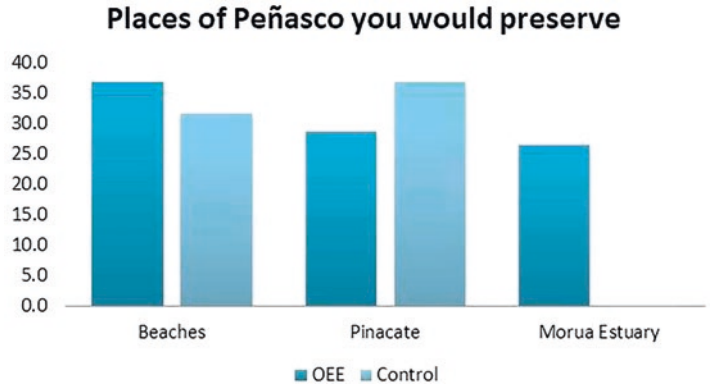


Fig. 16.11 Main places in Puerto Peñasco that youth from 11 to 16 years old would preserve. The data is shown in percentage. OEE = students participating in Youth Towards a Sustainable Northern Gulf OEE program (n = 49), Control = students who did not participate in the program (n = 19)

of their favorite places to visit in their free time. The wetlands are places known and visited by the community; however, the youth who explored them together with CEDO appreciate them on a different dimension and they cite the destruction of the estuaries and overfishing as some of the main problems facing their communities. Both issues were addressed in the "Youth Towards a Sustainable Northern Gulf" OEE program.

16.5.2 The Environmental Contest

CEDO's Environmental Contest was one of our most successful tools for involving youth in learning about their surroundings and helping maintain a healthy environment by solving local problems (Turk-Boyer et al., 2014b). These contests began in 1994 in Puerto Peñasco and in 2011 expanded to other communities in Sonora and Baja California.

The Environmental Contest was run for 22 years focusing on locally relevant environmental themes and the participation of students and teachers from different school levels. Participants, organized in teams, were trained to follow specific rules to guide them to do their own field research about the environment and the issues at hand, design solutions based on their findings, and then take action to raise awareness in their communities. In the early years, contests were focused on urban issues, and teams got involved in cleaning up trash, recycling, and similar activities. In later years, the contests became more sophisticated and focused on raising awareness about and offering protection for the region's natural resources: wetlands, rocky reefs, migratory birds, and sustainable fisheries, and tackling climate change (Table 16.2).

As an example, in the 2008 contest, "Exploring Between Tides and Rocks", students researched the diversity and abundance of organisms that inhabit the intertidal rocky reefs, described their condition, and evaluated potential threats such as solid waste disposal and specimen collection for aquariums and for making shell handcrafts (Fig. 16.12). In the 2009 contest "Flying to the End", student teams conducted a bird census in wetlands and beaches to learn about migratory birds that come to the region and evaluate threats such as loud music during holidays and off-road vehicles that crush nests in the coastal dunes. In the 2016 to 2019 contests "Fishing for the Future", students took field data of important fisheries in their communities and interviewed fishermen to identify the main fisheries problems such as unregulated fishing, overfishing, and incidental capture of other species that are impacting the ecosystem.

Some very interesting solutions emerged. One year, the students petitioned the municipal government to take care of least tern nesting sites. One group of students held a meeting with fishermen in their community (many who were their own parents!) to get them to stop overfishing and to follow the law. Other students conducted a massive ghost fishing gear clean up (underwater remains of abandoned traps, nets, and other gear) to stop species bycatch (Fig. 16.13) and others attempted

Table 16.2 Themes of the environmental contests organized by CEDO (1995–2019)

Year	Theme
1994–2000	Clean up and recycling campaigns
2001	Native plant gardens
2002–2003	Organic waste
2004	Cardboard recycling
2006	Sustainable water use
2007	Wetlands conservation
2008	Rocky reefs conservation
2009	Migratory birds conservation
2010	Wetlands and climate change
2011–2012	Sustainable fishing: fisheries improvement
2013	Climate change
2016	Sustainable fishing: ecosystem management
2017	Sustainable fishing: fisheries certification
2019	Sustainable fishing: fishing refuges

Fig. 16.12 Students conducting a research project about intertidal rocky reef invertebrates. (Credit: CEDO Archives)

to design a new flotation device for oyster culture in estuaries to reduce the solid waste problems created by the disintegration of their styrofoam floats.

Students' creativity was unleashed in the awareness campaigns they carried out in their community: they held parades, performed sketches, launched radio campaigns, talks, concerts and even wrote songs! These campaigns were important for raising awareness within the entire community.

Fig. 16.13 Environmental contest participants conducting a ghost trap clean up. (Credit: CEDO Archives)

Awards for contest winners were given in an Environment Festival in which students had a space to present their projects and exchange experiences with public. In an atmosphere of joy and celebration, with cultural events such as concerts, dances and plays (some presented by the participants themselves), the winners received their prizes from a jury and celebrated together their achievements. Student winners were invited to a multi-day field camp where they stayed overnight at CEDO's field station and visited some of the Natural Protected Areas in the region (Fig. 16.14).

What began as a simple contest has evolved into key actions that solve some of the region's environmental problems. Best of all, these solutions have been developed and implemented by local youth who are becoming leaders in their community and stewards of their natural resources. The most important result of this program was the opportunity it created for making community-level social change. The contest facilitated the development of bonding relationships among students, teachers, fishermen, and others in the community, engaging them at large in a collective project towards the responsible use of natural resources.

Fig. 16.14 Environmental Contest winners in a boat trip to the Biosphere Reserve Bahía de los Angeles, Canales de Ballenas y de Salsipuedes. (Credit: CEDO Archives)

16.6 Citizen Science for Sustainable Management

16.6.1 Beach Clean Ups: Promoting Collective Action

To motivate a change in attitude and behavior regarding the generation and disposal of solid waste on the beaches of the Northern Gulf of California, for 20 years, CEDO has joined the International Coastal Cleanup (ICC) initiative promoted by The Ocean Conservancy (https://oceanconservancy.org/) (Fig. 16.15). During these important events, volunteers from around the world organize themselves to remove waste found on the beaches, seabed, estuaries, rivers, and basins to contribute to the beaches' sanitation. Moreover, using the Clean Swell App students are able to classify and quantify the waste collected and share the information on the free access platform TIDES (https://www.coastalcleanupdata.org/), where they can identify the origin of the debris and propose management actions. The collected waste is sorted and the recyclable material is transported to collection centers.

In Puerto Peñasco, CEDO has helped engage local partners and different sectors to collaborate and take ownership of this initiative. Fishermen and divers have joined to carry out underwater cleaning. Some municipal government agencies and the Local Clean Beaches Committee adopted this event and have leveraged it to help certify beaches under the Mexican standard (NOM-AA-120-SCFI-2016) and to

Fig. 16.15 Scout group participating in The International Coastal Clean Up. (Credit: CEDO Archives)

obtain the prestigious Blue Flag distinction. Other communities have also engaged in this initiative and in 2018, the ICC was organized in a coordinated manner throughout the entire Northern Gulf of California region.

Over the years, 6000+ volunteers have participated in these efforts and more than 39,000 kg of waste have been removed from the sea, including pieces of glass, plastic and styrofoam, cigarette butts, bottle caps, plastic bags, plastic bottles, glass bottles, food wrappers, and disposable cups/plates/cutlery, among others.

CEDO plans to continue this collective beach cleanup effort as a means of encouraging citizen and civic participation in actions that help heal the environment and generate information to support specific waste management actions.

16.6.2 Citizen Monitoring: Generating Knowledge and Stewardship

As part of an integrated effort to protect the ecosystems and fishing resources in the region, citizen monitoring programs were established at CEDO early on. With the dual purpose of helping CEDO to generate scientific information as well as to

engage direct users of natural resources in promoting their conservation and responsible use, fishermen, fisherwomen, visiting and local students, and housewives were trained to monitor target species in the main habitats of the region. Efforts to date include long-term monitoring of the rocky intertidal ecosystem, populations of sea lions, least terns, and other migratory birds as well as underwater biodiversity and fisheries catch.

From 2000 to 2005, CEDO conducted two pilot projects to learn how to use this information to implement effective conservation of key habitats and species in the region. One project was conducted with commercial divers who harvest benthic mollusks in offshore rocky reefs. These fishermen participated with CEDO in a comprehensive program, conducting underwater monitoring, learning and sharing information about the natural history of their resources, establishing and monitoring voluntary no-fishing zones, and strengthening their cooperative and financial sustainability as an alternative to the gillnet fishing that ensnares the vaquita porpoise. In 2003, these efforts were recognized with the CONANP (National Commission of Natural Protected Areas) National Conservation Award.

The second project was focused on wetlands conservation and our work with oyster farmers, who engaged in monitoring and capacity building. With these groups, we sought to strengthen their commitment to low impact activities in Estero Morúa while enhancing their income from tourism. This led to the creation of the NaturArte program described above.

We highlight here the Lobos (sea lions) Group, a group of volunteer monitors established in 2013 who are driven by a love of community and the need to conserve their natural environment. This group consists of 12 trained monitors and 52 additional volunteers from Ejido Rodolfo Campodónico. They conduct activities related to the conservation of the California sea lion (*Zalophus californianus*), a sentinel species of San Jorge Island and other conservation actions in adjacent wetlands. In addition to sea lion monitoring, the Lobos Group has been trained by CEDO and specialists from CONANP and organizations such as The Marine Mammal Center (TMMC) (Sausalito, CA), to conduct sea lion disentanglement, eradication of exotic species, monitoring of the human use of the island, and more (Fig. 16.16).

Such has been the impact of this community group that the fisherman Manuel Muñoz Espinoza, the group's leader, won the 2019 Conservation Award granted by the Mexican federal government. Today, the Lobos Group has found a complementary income for their families, as they are hired by different research institutions to monitor various species in the region, including great white sharks, whales, ospreys, and desert fauna.

Following in the footsteps of their parents, 10 youngsters between 12 and 18 years old joined the conservation efforts of the Lobos Group and established the "Manos en Acción" (Hands in Action) youth group. These young people have gained enough experience and mastery of techniques to be incorporated into the community monitoring team (Fig. 16.17). Currently, the Manos en Acción group is being trained as environmental promoters and stewards to foster a positive environmental culture.

Fig. 16.16 California sea lion disentanglement by Lobos Group. (Credit: Abelardo Castillo CEDO)

Fig. 16.17 Least tern monitoring by Manos en Acción Group. (Credit: CEDO Archives)

CEDO looks forward to continuing this collaboration and support groups such as these and expanding their influence to other communities. These groups are key in helping to promote social cohesion, which is essential for conserving their natural resources, fostering responsible use, and adapting to challenges such as climate change.

Fig. 16.18 High school students using the *iNaturalist* App. (Credit: CEDO Archives)

16.6.3 Citizen Science

Starting in 2020, in collaboration with the National Commission on Biodiversity of the Federal Government of Mexico (CONABIO), CEDO has been promoting the use of *iNaturalist* App as a tool for all our OEE activities. *iNaturalist* gathers information from more than 11,971 observers and 7787 scientists with more than 286,290 observations of 6416 species. (https://www.naturalista.mx/projects/desierto-y-oceano-sonora).

This application in combination with other tools developed by CONABIO, for instance, enciclovida, (https://enciclovida.mx/) allow us to generate field guides by taxonomic groups, protected areas, municipalities, and other search criteria, which are then used in all our OEE activities (Fig. 16.18).

16.7 Lessons Learned in 43 Years

CEDO's Outdoor Environmental Education activities have built capacity for environmental stewardship in its broadest sense. From local to global, from the Northern Gulf of California to the oceans of the world, our future depends on nature for solutions to all our societal challenges, from poverty eradication to life below water (Agenda 2030 and Sustainable Development Goals) and other multilateral agreements that interlink nature, society, and the economy worldwide.

CEDO is working to build a core constituency to tackle the overarching challenges faced by coastal and desert communities of the Mexico–U.S. shared borderlands face, including overfishing, pollution, and the disruptions caused by a warming planet that threatens community livelihoods that depend on nature.

Achievements have not been easy or without stumbles, but these have offered important lessons that have enabled us to fine tune CEDO's work to be even more effective over time. Against a backdrop of sweeping political change on both sides of the border, social disruption from illegal activity, limited funding, a general reduction in field science activity in response to the cell and molecular science revolution, and an international pandemic, to name just a few of a host of challenges, CEDO has endured and thrived for more than 43 years.

Throughout CEDO's history, one of the things that mattered most was simply showing up, day after day, year after year, being present, on site, ready to engage, and prepared to work. Such continuity builds trust and positive expectations within the staff, community, and other audiences. While demonstrating that working in remote coastal communities with limited resources is possible and that giving up in the face of adversity is not an option.

Among the lessons learned, we would like to share:

- Persistence and endurance are essential to success; they are fueled by belief in the mission, faith in your ability to achieve it, and the power of the vision to draw you forward.
- Identifying and motivating champions who share your vision and are willing to represent you in places of power and assure continuity of resources for an organization.
- A strong work ethic and dedication at the top to inspire the same throughout the organization.
- Respect for the dignity and rights of all individuals, across ages, genders, nationalities, ethnicities, social classes, and other measures of diversity, human and nonhuman, can carry an organization through difficult times of disagreement, economic hardship, and loss.
- Practice flexibility and adaptation to prepare for the inevitability of change. Learn from mistakes and setbacks.
- Nurture creativity. It can take you around corners and over roadblocks.
- Listen with a closed mouth and an open mind.
- Respect the boundaries of your mission as you seize opportunities and nurture the organization.
- Leading involves pushing and pulling, but mostly getting out of the way.
- Connecting the dots by understanding community needs, educating all the stakeholders of a community from leaders to youth to direct resource users to build momentum and guide action at a deep community level.

With these in mind, seize successful models, apply them to local conditions, and creatively modify them as needed to achieve your goals. CEDO has found this to be a formula for success.

16.8 Conclusions

At CEDO, we believe that successful holistic solutions for complex systems can only spring from a core of community engagement and development. The OEE programs integrated into CEDO conservation strategies have been a powerful tool to achieve this. Through field-based curricula development, environmental contests, beach clean-ups, ecology clubs, summer camps, and more, students, instructors, and local stakeholders such as fisherfolk, oyster farmers, landowners, and others have had the opportunity to have first-hand experiences in key habitats and have gained a deep appreciation and understanding of them.

Focused on increasing participants' scientific understanding of the environment, CEDO's OEE programs instill a sense of place-based identity and empower action. Through the development of educational curricula and summer camps, in addition to the knowledge and appreciation of ecosystems and species, we have introduced tens of thousands of the region's school kids and teachers to relevant topics such as wetlands conservation, sustainable fisheries, and climate change. With CEDO's traditional environmental contests, monitoring programs, and ecosystem management initiatives, they have participated in the study of the region's environmental problems and the design of projects to advance their solution. The OEE programs have been an enriching experience for students, tourists, and stakeholders, giving all an understanding of their environment and the importance of everyone's participation in caring for it.

Empowered by knowledge and an atmosphere of respect, CEDO has built a public environmental literacy framework and promoted examples of collective action for ecosystem management and conservation. The organization looks forward to continuing to train community members and creating an environmentally friendly culture for future generations. CEDO's Northern Gulf of California OEE programs are laying the foundation for a new generation of stewards, making them custodians of their natural resources and spokespeople in their communities.

Acknowledgments We thank all former CEDO staff involved in implementing the OEE programs described and current staff Abelardo Castillo, Alan Gil, Aldemaro García, Alma Valdenebro, Carolina Ochoa, David Nájera, Eleazar López, Elia I. Polanco, Eliud Flores, Hem Nalini Morzaria-Luna, Karen Levyszpiro, Manuel Muñoz, René Loaiza, Socorro González, the Board of Directors of CEDO Inc., CEDO A.C. and MAC CEDO A.C. for their invaluable work, the enthusiastic professors, students, community members, Las Conchas HOA, and other nature enthusiasts that have participated in our programs. Personnel of the Upper Gulf of California and Colorado River Delta Biosphere Reserve, Pinacate and Gran Desierto de Altar Biosphere Reserve, The Gulf of California Islands Flora and Fauna Protection Area. Local governments of Puerto Peñasco, Caborca, San Luis Río Colorado, San Felipe, and Mexicali. CONABIO and Dr. Carlos Galindo-Leal. All of the volunteers that have contributed to the implementation of programs, sponsors, and partners amongst them June Woodman and the Clifton Family.

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Chapter 17
The Bronte Creek Project: Outdoor Environmental Education in a High School

John McKillop

17.1 Introduction

The Bronte Creek Project (BCP) was a unique high school outdoor environmental education program initiated by two teachers, Bryn Davies and myself, in the Halton District board of education in Ontario Canada in 1981 and it continued until 2019. It got its name from its first outdoor site along the bank of Bronte Creek near its mouth on Lake Ontario. This integrated environmental leadership training program served over 3000 high school students and over 8000 elementary school students during its 38-year history. Initially, the BCP operated in one high school, at one outdoor site, for one semester each year. By the end, it involved fifteen high schools and sixty elementary schools, operated simultaneously at two outdoor sites, and for both semesters of the school year; this provided 90 places for high school students each year. The BCP gave students a transformative experience, introducing them to a wide range of environmental and sustainability issues from within a natural outdoor setting.

As is the case with most new things, it was not born whole, and evolved under the tutelage of its many staff and students, always looking to improve itself. Like most alternative programs, the BCP did not experience smooth sailing; among other things, it constantly had to contend with financial stress, finding a suitable outdoor site, transportation, and recruitment issues.

The BCP had spawned a number of similar programs in other school boards in the province. In spite of its enormous success, the program was cancelled in 2019, largely as a result of financial restraints stemming from provincial budget cuts. As often happens, it is the non-mainstream courses that are the first to be cut. As of

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_17

2021, most environment-focused high school programs in the province have suffered a similar fate.

In these times of expanding awareness of the existential crisis facing many species on the planet, including ours (Scheffers et al., 2016), education is a large part of the solution. Our children need to be raised as competent environmental citizens with an understanding of the interconnectedness of the multiple elements of ecosystems. They need to be taught that there are solutions to climate change and other environmental issues and that those solutions can be achieved by working together. If we can arm our children with knowledge of environmental issues, it is they who will find creative solutions and lead the way in transforming society to more sustainable ways of living.

In the following, I describe some of the background conditions that fostered interest in, and a need for, a program like the BCP. I provide a detailed description of the program, identifying some of its unique features. I then discuss feedback from students and faculty involved in the program and provide reflections on what worked, what did not work, and what could be done better.

17.2 Political, Economic, Cultural, and Social Contexts and Conditions

The BCP program was born at a time when there was a growing environmental movement and a growing interest in exploring innovation in education. In Ontario in the seventies, there was a very strong summer-camp culture that provided many children with extended contact with the natural world and older students with leadership experiences. These camps were generally run privately without an affiliation with school boards. There was little contact with the natural world from within the education system. Some high schools offered environmental science courses but they were classroom oriented. Academic courses were text- and process-focused with little room for experiential learning. In the elementary schools, the curriculum was not designed to get kids outside; field trips were rare and field trips into natural environments rarer still.

Early on in my teaching career, I had begun to be interested in alternative forms of education and was influenced by George Leonard's *Education and Ecstasy* (Leonard, 1968) and AS Neill's *Summerhill* (1959), in which he describes an alternative or free school in Britain. I had also read Steve Van Matre's *Acclimatizing* (van Matre, 1972) and, later, Paul Hawkins *The Ecology of Commerce* (Hawkins, 1993) and Joanna Macy's *World as Lover, World as Self* (Macy, 2003). Collectively, these publications presented a compelling vision of outdoor environmental education characterized by emersion in—and active intercourse with—nature, not simply experiencing nature (although that is central), but also learning about the complex interactions of natural phenomena that contribute to the balance and rhythm of ecosystems and how they are influenced by human activities.

By then, through friends and colleagues, I had encountered Bert Horwood, a professor in the education department at Queens University in Kingston, ON. Bert was a frontrunner in the field of experiential education and a believer that it should be a strong part of the teaching in outdoor education and specifically in the teaching of deep ecology. For Bert, experience should be central to all meaningful education. Bert became a bit of a mentor to me, and his writing had a significant influence on my approach to environmental education. One article in particular, "Tasting the berries: deep ecology and experiential education," reinforced the direction of my thinking (Horwood, 1991). Bert's main premise, that the deep ecology and experiential learning movements had much in common, was contributing to a major attitude shift from concern about humans to concern for the biosphere, a move away from anthropocentrism and towards biocentrism. This was also allowing teachers to shift from teaching that relied on their experiences to letting students learn from their own experiences.

17.3 What Shapes the Program

The BCP originated at a new, open-concept, experimental high school, that encouraged teachers to try out more progressive educational practices, including mastery learning, no-failure evaluation and integrated programs (Bloom, 1956). The founders had long felt that traditional education was designed to sustain the status quo in society and did not do enough to encourage critical thinking or concern about serious societal issues. The counterculture had continued from the sixties and there was a growing number of students who struggled with traditional learning.

The BCP vision in the beginning was to provide a diverse experience in an outdoor setting for grade 11 students, that would focus on self-sustainability and community building. Students looking for a break from traditional classroom learning were the initial targets for the program. The program integrated four existing high school subject areas or disciplines and did so throughout its existence. The idea was that each discipline should mesh with the others to provide transformative experiences for the students. The subject areas were defined by courses. In the beginning they included: environmental science, English, art, and outdoor physical education. These courses changed over time as the program evolved. The first two years saw mostly students from the targeted group. Interestingly, we found throughout the years that whatever the academic level of our students, they responded positively to the responsibilities demanded by the program. Many of our school-phobic students went on to accomplish successful careers and lives. Our mandate was to provide a break from traditional classroom learning and deliver experiences that would kindle and enable the passions our students had within them.

17.4 Program Description

A set of basic operating principles is a requisite for any successful program. These principles become guideposts for program development. They tend to evolve and so it was with the BCP. This was our shortlist of basic principles.

17.4.1 Integrated Disciplines

Putting different disciplines together in one program is not a new concept but it does require some decision making. There are many examples of integrated programs where the mastery of each discipline is the intended objective. Different disciplines can reinforce each other when taught in tandem. One such program at Lord Elgin combined American history with American literature, the one helping in the understanding of the other. I was the history teacher in that program. Other integrated programs, however, aim to be a transformative experience, where the focus is more on the students' growth and development, than the integrity of the disciplines. Think of the disciplines as chunks of fruit. You can mix the fruit like in a salad, each chunk maintaining its integrity, or you can make a fruit cake with the chunks, where the end result transcends the bit parts. The whole becomes greater than the sum of its parts. This had been one of Bert Horwood's core concepts. Our decision was that curriculum pieces should be integrated more like a fruit cake than a fruit salad. For us the focus was that the transformation of students was more important than the disciplines. The disciplines were the tools to help students grow individually and as a community. We often had to work around curriculum guidelines, deciding which disciplines best fit what we wanted to accomplish.

17.4.2 Service Learning

Early on, it became clear that service learning in the form of a leadership experience for the high school students would become the centrepiece of our program. By having our students provide outdoor educational experiences for younger students, the high school students would learn environmental principles more deeply and would receive training in leadership; at the same time, the elementary school students would receive unique experiential instruction in environmental studies. It would be a win-win for our students and the community at large. As anyone with a camp background will know, there is often a seemingly magical synergism when older kids work with younger ones. We had invited a couple of elementary school classes to come on a field trip to visit the BCP site in the second year and saw this magic, as we ran a simple environmental program led by our high school students. Those experiences were what led us into our next phase of development. We realized that

by moving towards a leadership-focused program, we could fill a niche not generally utilized in the school system—leadership experience for our students and supervised outdoor programs for young students.

I had also been very influenced by schools I had visited in Cuba. Their system was that half the students worked in the fields while the other half were in school and then they would switch after lunch. These schools were producing a large percentage of the agricultural output in the country. We saw the pride and confidence that emanated from those students.

17.4.3 Environment

The prism through which we channeled our content was an environmental one and so, inevitably, that became our focus with the younger students who came to visit. We had experimented with more traditional nature activities, such as pond studies, nature hikes etc., which, for us, never achieved what we were looking for. We needed to find activities that were better designed to reconnect students emotionally to the natural world, as well as encourage them to correct behaviours that were damaging to the environment. Eventually, we encountered the Institute for Earth Education, which was developing very focused, sequentially designed environmental education programs that had a strong emotional context. We bought and ran their highly acclaimed "Earthkeepers" program (Van Matre, 1990) and taught our students to teach it to the younger children. This program became the centrepiece of the BCP throughout its existence. The Earthkeepers program was designed for grade 5 students, but it quickly permeated our entire high school program. Our students became very enamoured with the roles they were playing and even felt responsible for monitoring behaviours in our little community that might cause environmental harm. We always felt that this program had the greatest impact on the older students, around 17 years old but still kids at heart.

Earthkeepers required the young students to come for 3 days. In the beginning we were situated on a ten-acre natural setting with a small cabin, which was not adequate for overnights. We managed to connect with a local Boy Scout camp willing to rent us their facility during the week, when they were not using it, giving us the buildings and the space we needed and giving them extra cash. Over the years, as we evolved and grew, our sites advanced through a number of scout camps, a couple of church camps and a conservation area. None of these camps was being utilized during the school week so they were ideal for our purposes and we provided extra revenue for the owners.

Finances were always an issue for the program. The school board paid staff salaries and some operational expenses but we also had to charge our students a nominal amount to pay for lunches and the weeklong wilderness trip we did at the end of the semester. As I discuss later, these trips were a peak experience for our students. We also charged the elementary students for their Earthkeepers experience. Even with that, we had to do some fundraising, which included

battle-of-the-bands competitions, movie nights at the high school, and taking our turn running a local bingo night. On the whole, most years we managed to be financially independent.

17.4.4 Community

A sense of community was always carefully nurtured. Inclusiveness was encouraged, along with respect for others and their differences. We fostered a team approach to the tasks at hand and made sure students had input into decision making. We held regular group meetings to organize activities and deal with issues.

Group responsibilities such as grocery shopping, cooking, cleaning and property maintenance were shared by all. Community projects were undertaken by all students. Making activity props for our Earthkeepers program, teaching new activities, designing t-shirts or working on the semester yearbook are examples.

Culture in any community evolves and it was no different for BCP. Environment and outdoor adventure were the original hooks that molded the ethos and values of the BCP community, and both of these remained strong throughout our history, but in the end, there was much more than that. Students experienced a sense of involvement and belonging to a group trying to make a difference in the world. For many, this new sense of belonging was being experienced for the first time outside family.

We took on nature names like Crane, Hawthorn, Tundra, Bog, Shale and many others that honoured nature, at first to provide anonymity when working with younger kids, but these assumed names took over the identities of all of us, staff included. Even back in home schools, these names often continued, which, amongst other things, led to a bonding between students from different semesters. We eventually began holding monthly get-togethers—what we called "coffee houses at Sidrabene", a lovely Latvian camp and my last site—where students from many semesters came together for an evening of music, poetry and companionship.

We learned that at some schools, the "BCP alumni" became a bit of a clique, separating themselves from the rest of the student body. We never thought that this was healthy and considered dropping the nature names, but in the end, they were too entrenched, and on the whole, were more beneficial than not.

17.4.5 Educational Approaches

With both high school students and the younger ones, we tried to pull our learners rather than push them. Learning activities were designed to engage students, whatever the age, stirring their imaginations and making them excited about what they were doing.

Imagine a leader with five or six students entering a model of a leaf and working with mission control to call for the ingredients to create sugar. They would call for and receive three ping pong balls joined with Velcro—a CO_2 molecule—and a water molecule, H_2O; then, through trying to form a sugar molecule, they would discover that they needed one more ingredient to make it work, sunshine. When they received the yellow sunshine ball, they were able to put the sugar molecule together except for one oxygen atom, which they were told to throw out through the oxygen-ejection tube. They had completed the process of photosynthesis or energy flow. Then as part of their reflection, they were given a section of an orange, a symbol for what they had produced. This was a very successful learning experience. (See Van Matre, 1979 for a description of the Food Factory activity.)

Our main work was putting our high school students, then the elementary students, through the Earthkeepers program. The activity described above is part of that program, one of four activities students go through while earning their "K" or knowledge key. Overall, we wanted to help everybody involved to become better citizens of planet Earth.

17.4.6 Rituals

We encouraged rituals as a means of reinforcing the values of the program and to enhance the sense of belonging to the community. For example, as already mentioned, we all had nature names. We developed a waste watch king/queen skit to collect and measure waste at mealtimes. We also took turns providing a reading or quote before meals. We held sharing circles and ran coffee house nights, open to all of our students and alumni, where students performed music, told stories or read poetry.

17.4.7 Reflection

Reflection was an important ingredient of the program as it should be for any organization that wishes to strengthen itself. We held regular staff gatherings to plan activities but also to review, evaluate and revise what we were doing. We had full community meetings so that the students had some input into issues and decision making. They often would bring up issues, then we would proceed as a group to solve them.

Students kept daily journals (not logs) as a means of expression, sometimes creative as in poetry or sketching, and sometimes emotional reflections on experiences and feelings. They all had personal nature spots on the property, which they visited regularly and would do a creative representation of these sites seasonally.

17.4.8 Adventure Wilderness Trips

As an outdoor experiential program, we found the inclusion of a wilderness camping experience to be a natural fit to the BCP. It became one of the peak moments of each semester for most of the students. In the early years, we only ran the program in the second semester, and so we did a backpacking trip in the beginning of May. It had to happen early in May because the overnight Earthkeepers programs were scheduled for late May and early June. We had originally done backpacking trips at the spectacular Killarney Provincial park near Sudbury Ontario but evolved to doing canoe trips in the equally breathtaking Algonquin Provincial park. We later began doing the trips after the kids' days, in mid-June, to make the trip more like a celebration of the semester.

Once we were running programs both semesters, we had to plan winter trips for the first-semester students. We began going to camp settings in near-northern Ontario, in Temagami Provincial park, where we could stay in cabins and snowshoe or cross-country ski as daytime activities. We would spend a day building Quincy huts out of snow and then sleep in them overnight. We even organized a dogsled overnight experience for a couple of semesters. We always used experienced people for supervision on the trips.

It was inspiring to see the students utilizing the community and leadership skills they had been developing throughout the semester. These skills, along with the basic wilderness competencies they were learning, such as first aid, trip planning, canoeing and navigation, made the trips an attestation of how far the students had come. We were very fortunate that, for all the trips throughout the years, we never experienced an emergency requiring immediate communication asking for help. This was especially fortunate during the first 25 years of these trips when cell phones were not yet in general use.

I remember one young woman who had recently lost her mother and was on one of the backpacking trips over her birthday. At the beginning of the trip, she was clearly grieving and would rather have been anywhere else but with us. When we got to the summit of Silver Peak, our goal that day in Killarney, she exclaimed, along with a brief meltdown, "All there is up here are more rocks and trees". In spite of this momentary low, with the support of the group, she ended up having a great experience.

17.4.9 Flexibility

Any successful program has to be flexible and able to adjust to changing conditions. There was no shortage of such changing conditions throughout our history. Whether it was finances, transportation, program sites, or staffing issues, we had to learn to cope; over time, the resiliency we built became one of our strengths.

Our biggest challenge came in 2003. It was at this time that the Ontario government's long-rumoured reduction of the length of the high school diploma from five years to four years finally occurred. BCP fell into an interesting challenge. Students could still fit the program into their schedules, but it was more difficult, and filling four semesters (fall and winter at each of two schools), as we were doing by then, became quite challenging. We had focused our efforts on adapting BCP to higher grades; instead of moving the BCP to earlier grades, as some of the BCP-inspired programs at other schools had done, it made more sense for us to add another program at the grade 10 level. So, we started to build a grade 10 integrated program with a range of core credits, that students could easily fit into their schedules. The challenge then was identifying and developing elements of the BCP that would work well at the grade 10 level, creating the branding, and encouraging the Halton schools to send students to this new program.

Out of this challenge, Trailhead was born. We thought the grade 4 Novice Program, a single-day introductory program that we had developed, was a nice fit as a mentorship opportunity for the grade 10 age group. So, we moved all the Novice Programs over to the Trailhead groups for their leadership training. These worked well, as they did not involve overnight stays, so could easily fit into the day program of the grade 10 curriculum. The grade 10 students evinced a mixture of competencies at the beginning. Because we were offering core credits, we attracted many very motivated, academic students, interested in some variety in their education environment and alternate styles of learning. Many of the students were very responsible, reliable, and excellent leaders with the elementary kids. Our fears of Grade 10 students being too young to lead the Novice Program materialized most prominently with students who were already struggling in the classroom. There was a demographic of more hands-on learners, who, combined with their younger age, presented a considerable challenge in our outdoor, more independent setting. We gradually succeeded in adapting to this subgroup and, over time, the program developed a reputation for providing training in leadership and responsibility. Eventually, the blend of different kinds of learners and personalities worked itself out and we graduated some remarkably engaged leaders.

Trailhead provided an outstanding outlet for grade 10-age students to learn civics and careers in an alive, experiential setting. The grade 10 students were also closer in age to the grade 4s, which became a real benefit. The elementary kids looked up to them as role models; they could more easily see themselves in these younger high school students. This had a complementary effect, giving the high school students confidence, and also made them more accountable for their actions. The elementary kids would copy everything the high school students did—the way they spoke, the language they used, even the way they moved their hand through their hair! The older students quickly learned that their behaviour had an impact. It was profound how much this dynamic influenced the Trailhead students to consider their language and be intentional about how they spoke and dressed. There was a wonderfully positive effect on the grade 4 kids as they learned from the grade 10 students how to be in the world. This was a very different connection than the one that takes place between a teacher and their students.

At the onset, we had Trailhead and the BCP operating at different sites. However, it was not long before school board officials began to question the site rental and transportation costs. Ultimately, to save the programs, it was necessary to have both operate at one site. Trailhead therefore moved to the beautiful site of the BCP at Sidrabene, a local Latvian camp. After a couple of semesters of adjustment, the two programs ran extremely well for another 15 years.

An added bonus was that even though it was difficult for students to fit two integrated programs into the four-year diploma, there were a number of Trailhead students who then enrolled in the BCP program.

17.4.10 How to Build a Program

A number of personal qualities are shared by successful innovators. You might not need all of the following to be successful in setting up an innovative program but you will need some for sure. At the least, you will need to be positive, persistent, resilient and a problem solver. It will be helpful to be a good, clear communicator, an organizer, and a detail person. Often, it is a team that combines these qualities and skills that succeeds in an innovative enterprise.

For the inspired, there are some important tips for starting an integrated program or any non-mainstream educational program. Understand that more innovations fail than succeed. Those that succeed are the ones where perseverance and resiliency are in large supply. Understand that for any venture, there will be obstacles to overcome, and progress is seldom linear. Any genuine visionary understands that authentic visions evolve and are richer when many people contribute. Do not be afraid to slow your work in order to marshal your resources and seek alternative ways forward. Play the long game. If the venture is worth it, it does not have to be completed today or even this year.

Some meaningful tips include:

1. Have a clear and consistent vision: The better you can communicate what you are trying to accomplish, the easier the obstacles can be overcome. Sometimes communication needs to be tailored to meet specific audiences. This means you need to understand the needs and concerns of each audience. Compromise can be a useful tool, but you have to know what the core values of the vision are and not allow them to be diminished.
2. Understand your weaknesses: Constraints may centre upon a lack of influential contacts, financial resources, infrastructure or time. Whatever they may be, do not be afraid to keep moving forward. Conditions are constantly changing, and your weakness may even become a strength. One key contact may lead to another. A financial source may suddenly present itself.

3. Seek out allies and organize them: Who are the stakeholders that can benefit from the outcome? Among them, you will find your allies. Speak with truth and clarity to people you would like to work with and arm them with your passion. Always remember that folks working with you need to feel needed, as well as useful. Make sure they have input into planning and have significant roles to play.
4. Utilize effective administrative practices.
5. Keep good records and notes of meetings and decisions.

17.5 Experience and Evaluation

17.5.1 The Bronte Creek Project Experience

The BCP has never been studied formally so there are no summary statistics of outcomes; there are lots of anecdotes. The program existed for 38 years—extraordinary longevity for an innovative high school program in Ontario. There were articles written extolling the program and it received the Ace award for creativity from the Halton board of education in 1992. Over the years, there was a constant stream of testimonials from the students, parents, and others who came into contact with the program.

17.5.1.1 Articles About BCP

The articles included one in *Explore* magazine, Canada's outdoor adventure magazine, published in Sept. 1996. It stated that, "Other educators are recognizing that the lessons that the BCP students are learning in the woods and the hills go far deeper than how to tie a knot or build a campfire. They're learning lessons that will stick with them for the rest of their lives". On May 10, 1983, the *Hamilton Spectator* wrote "the Bronte Creek Project is an intense five month program in both academic and practical outdoor and community skill training that is turning its 17 students on to learning. 'It's great—we love it' was the echoed chorus of three grade 11 & 12 students who were preparing egg salad sandwiches for the group. (The eggs came directly from the 17 chickens they kept in a small barn.)" Other articles appeared in *Pathways*, the journal for the Council of Outdoor Educators in Ontario and in *Green Teacher* magazine.

17.5.1.2 Testimonials from Former Students

Natalie Gnys was in the BCP in 1992: Let me tell you how alumni of the BCP can affect the world: I lived in Asia for a few years after I graduated from University... While in Vietnam (2002/2003), working for CIDA [The Canadian International

Development Agency], my Canadian colleague and I started a "Clean up the Beach" campaign at Danang University... Many people across the city cleaned up the famous China Beach. Our message spread across the country via State TV and soon after, our Uni friend, Nhung, started her own "Green Ocean" environmental initiative group. From there, she participated in the UN Millennium development agenda, representing the youth of her country, working alongside former Secretary General Kofi Annan's daughter. The environmental seed I planted in Vietnam came from what I learned through the Bronte Creek Project. I remember sitting in my little hotel room in Danang, telling Nhung all about Earth education—she soaked it all up. Those lessons have far reaching effects and can change the world. Green Ocean continues on and is still a far reaching group, changing Vietnam for the better.

Sean Ireland: I was in the BCP in 1991 and it was the best time of my life. Being a BCP student changed my life. I have a 16 year old daughter, who would love to do that program and would benefit from it. I just wish it was still running.

Zackeira Eddy was in the BCP in 2007: I was in both Trailhead and BCP and was so sorry to hear that it has been cut. I continued my adventures in Australia, the US and BC working with Outward Bound. I also completed the MAST [Mountain Adventure Skills Training] program in Fernie BC. I am now working in a climbing gym in Mississauga ON.

Ceira Reider was in the BCP in 2019, the last year before it was discontinued: I have social anxiety, which was made a hundred times worse by my high school experience. In my first high school I was called abusive names, slammed into lockers and targeted during gym class. I had high stress levels all the time and cried almost every day. I moved to a new school, which was better but there was still a lot of cyber and verbal bullying. Because of this, I worked outside of class a lot on my own. I am an introvert, and this just made me feel excluded. I felt that nobody liked me. My anxiety was getting worse day by day. It got so bad I stopped eating breakfast for 4 months straight because I was worried I might throw it up.

Then I went on to BCP at the start of February 2019 and everything changed. It was an amazing experience that I wouldn't have traded for anything. My classmates and I learned to connect with, respect and care for nature. We went outside every day, on hikes or to our personal magic spots. We met First Nations elders who taught us that we are a part of nature, not separate from it. We mentored younger students in a program called Earthkeepers.

Fresh air makes you feel much happier and being outside is great for your mind, soul and body. Many other students in my program were bullied in school, too, but we all worked well together and respected each other here.

We made friendships in this program that will last a lifetime. Thousands of students who have passed through the Bronte Creek Project say it changed their lives. It is a judgment-free school. Students are given a chance to fit in and become friends by being shown a different side to school, a different side to life in general. Being in nature allows you to see things clearly and learn better.

Environmental education programs, like the one I participated in, help to prepare my generation for today's reality: we have to understand our environment to stop the climate crisis and be prepared for the green economy. These programs… are the

answer to the essential educational needs of today and we are fighting to save them…. The positive effects of BCP have been lasting for me and I am a stronger person than before.

17.5.1.3 Testimonials from Parents

Isabel DesRoches: My daughter and her friends are in absolute frustration over this latest school board decision. When BCP/Trailhead announced it was cut, these kids signed petitions, were interviewed by newspapers, wrote testimonials, did delegations to the trustees, made PowerPoint slideshows and attended every meeting they could...AND this got them nothing… Today they went to school to write an exam on top of missing study time to fight for this cause last night. I see these girls accomplishing great things in their life…

Donald Green: I am writing this letter for the purpose of telling you the benefits of the Bronte Creek Project as it relates to my son Jamie. Jamie is not academically oriented but rather is more into the outdoors and all that the outdoors encompasses. The program has inspired him to pursue a career in outdoor recreation and he is now at a community college studying outdoor recreation. As parents, we just want to say how valuable this program was to our son and that we support this type of practical and non-academic program as being both useful and necessary.

17.5.1.4 Testimonials from Former Staff

Rachel Plotkin, who is presently a writer for the David Suzuki Foundation: Bronte Creek was a magical experience on many fronts, both curated and organic, for staff and students. It was its own world, a world in which students tramped through the woods instead of down school hallways, where the often cruel high school culture seemed left behind, replaced by an environment of friendship and wonder. It was a place we all learned from doing, rather than being talked at.

In my experience over 5 semesters, the students were quite varied, ranging from natural leaders who had heard about it from peer alums to those with a precarious hold on academics who were nudged to apply by guidance counsellors believing that they might fare better in the experiential learning environment. I think that the general mash of students and the connections they formed was one of the magical ingredients to Bronte's success—each semester was kind of like its own Breakfast Club movie.

Mike Craig: After 17 years I made the challenging decision to quit my Bronte Creek job as a teacher and re-create myself as an entrepreneur closer to home in Guelph [ON]. The intention was to spend more time with my wife and young kids, and also immerse myself in the community where I lived. It was probably the most difficult decision of my life, and yet, I know I have brought the central principles and values of Bronte Creek into everything that I do, and my family and community are the richer for it.

17.5.1.5 What Could Have Been Done Differently?

In some respects, the program failed due to politics and the lack of acceptance on the part of decision makers that the existential issues of our time were upon us, requiring bold action in many sectors including education. This failure of foresight is a local, national and global problem and is the main reason why we are in the muddle that we are in now. This is my more global perspective on why ambitious innovations like the BCP fail.

More locally, there are some things that the program might have done to prolong its life. With regard to financing, always the greatest challenge, school board administration and program staff could have been more creative. Funding had been a challenge for many years and dependence on funding from just school board coffers was always going to be problematic. There are many examples of school programs that went into the public sphere to find support either through grants or direct support. Organizations such as Environment Funders Canada help projects with grants from a variety of environment-focused organizations. Another is EECom, the Canadian network for environmental education and communication. Forming partnerships with like-minded groups is beneficial for all involved.

Recruitment of students also became a growing concern in the last 10 years of the program and that, in my opinion, was mainly because staff forgot one of the basic operating principles, which was to recruit directly, not through regular board processes. It is time consuming and adds to the workload of the staff but was always the most effective way to recruit. Students, like most of us, respond to the personal approach and full-disclosure information from source leads students to make more nuanced decisions about course selection.

17.6 Conclusions

The Earth is in existential crisis; most experts agree that the next 50 years will determine the viability of our natural systems. It seems clear that it is possible to mitigate or eliminate most of the threats. The lack of political will around the world, especially amongst the larger powers, is a major obstacle. Even more so is the acquisitive consumer-focused lifestyles of humans everywhere. Those who have, want more, and those who don't have, want. This is contributing to the unravelling of our natural systems. Awareness of the threats and concern for the future has grown in the last 50 years. The worldwide COVID-19 pandemic has helped. However, changing how humans live, as necessary as it may be, will not be easy, maybe even impossible. The alternatives though are unthinkable.

Education is not the only tool for change. It will take creative innovation in all sectors of society, from government, the corporate world, technology and the media, along with education for us to overcome these threats. The Bronte Creek Project model is only one approach, albeit a successful, reasonably inexpensive one, that, more than anything, focused on encouraging an emotional connection with the

natural world. This is a more important agent of change than an academic understanding of the issues.

I believe that there are jurisdictions that would benefit from the integrated experiential approach of this program along with the service learning component, of older students working with younger ones. With that in mind, we have created a website memoir of the program, which can be used as a template to initiate something similar. This website can be found at www.brontecreekproject.ca.

Acknowledgments I thank my longtime friend and colleague Rick Beninger, Professor Emeritus in Psychology at Queens University, Kingston ON for his helpful comments on an earlier version of this chapter.

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Chapter 18
Walk with the Formosa Macaque

Yun-Hsuan Chiu

18.1 Introduction to the Promotion of Environmental Education Act in Taiwan

Taiwan is an East Asian island nation situated on the northwest side of the Pacific Ocean with a population of approximately 23,3500,000. In 1992, scholars in Taiwan proposed the idea of formulating an environmental education act, and a draft Environmental Education Act was formulated in 1993, but Executive Yuan deemed that there was no legislation necessity. However, during the 2007 presidential election, a candidate listed environmental education legislation as a major policy, and eventually Executive Yuan promulgated the "Environmental Education Act" on June 5, 2010 (Laws & Regulation Database of the Republic of China (Taiwan)).

One year later, the act was implemented on June 5, 2011, as Taiwan became the sixth country in the world to implement an environmental education act following the U.S., Brazil, Japan, South Korea, and the Philippines. The legislative goals of Taiwan's Environmental Education Act were to nurture Taiwanese citizens' understanding on the ethical relationship between themselves and the environment, enhance Taiwanese people's knowledge, skills, mindset, and values of environmental protection, and further encourage Taiwanese citizens to treasure the environment and take actions to achieve sustainable development.

The year 2021 marks the tenth anniversary of Taiwan's implementation of the Environmental Education Act. By December 2022, there were 257 certified environmental education sites and 10,072 certified environmental education personnel in all of Taiwan (Environmental education certification system, n.d). Through the certified sites and personnel, environmental education courses and activities have

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_18

been organized across Taiwan to convey diverse environmental viewpoints and strengthen the important concept of harmonious coexistence between people and the environment.

With the rapid promotion of the Environmental Education Act, the government has relied on the professional assistance of the private sector to keep up with changing times, consequently giving rise to private organizations and enterprises that are dedicated to the promotion of environmental education. For example, Friendly SEED (Friendly toward Sustainable Environmental Education Development), funded in 2010, is a private corporation that gathers environmental education professionals to help the government and enterprises to manage and operate environmental learning centers, train personnel, and develop and implement training programs, or even help other public or enterprises to plan and apply for environmental education facility sites.

Other non-profit organizations, such as the Society of Wilderness and Wild Bird Society of Taipei, have also started to plan for and operate local environmental learning centers by means of wilderness adoption, charitable trust, and government contract; some larger enterprises have also established foundations to operate private centers. These private engagements also cooperate with the public sector to further drive the rapid development of environmental education facility sites.

18.2 Background and Content of Taiwan's Outdoor Education Promotion

Outdoor education has long existed in Taiwan since the Japanese colonial period. Back then, "public schools" promoted mountain climbing, offering venues and opportunities for "practical learning" of new knowledge. Later, outdoor education transformed through various formats, and its content grew richer and more diverse to include mountain climbing, hiking, scouting, place based education, natural survey, environmental education, overseas study, and mountain education.

In recent years, with Taiwan's educational reform and the society's growing emphasis on environmental education and explorative and experiential education, outdoor education has drawn more attention from schools and relevant agencies. However, there remain some real issues of outdoor education promotion. For example, there is a lack of comprehensive supporting measures on the administrative end of education agencies, including funding, manpower, organization, related information, and incentive and recognition of relevant personnel.

Moreover, when school teachers organize outdoor education programs, they face the issues of teaching agenda and class rescheduling, school expenditures, manpower for the execution of the program, administrative procedures application, safety of outdoor activities, and related laws and regulations, which hinder their willingness to take students out of the classroom for outdoor education.

Furthermore, many teachers experience difficulty choosing outdoor education sites, because, at present, the resources of outdoor education sites are not integrated, and existing teaching plans and resources of each site are not gathered and promoted, leading to unorganized information that has not been integrated and updated.

Further examination of the risk assessment and management mechanism of Taiwan's outdoor education sites shows that there are no comprehensive risk assessment tools and models, and therefore, schools have many concerns when promoting outdoor education. In addition to the concerns for missing administrative support and site safety assessment, most school teachers generally lack practical professional training on the planning and evaluation of learning experience offered by outdoor education.

Therefore, there is room for improvement in terms of changing education professionals' mindset on outdoor education and boosting teachers' outdoor teaching capacity and willingness. In light of the aforementioned issues of outdoor education implementation, the Ministry of Education promulgated the "Guidelines Governing the Establishment of Outdoor Education Promotion Committee" and "Outdoor Education Declaration of R.O.C." in 2014 (Outdoor Education, n.d), hoping to address the issues and problems faced by outdoor education through the assistance of policies and related supports, and establish outdoor education's important place in the future 12-year basic education.

A decade after the promulgation and implementation of the Environmental Education Act in 2011, "environmental education facility sites" certified by the government have also created more quality learning venues for the public, government agencies of all levels, and schools; specifically, these facility sites have provided schools more quality venues, teaching staff, and curricula of outdoor education, thus lessening the burdens of outdoor education promotion of schools and teachers. The active promotion of outdoor education has also provided environmental education facility sites more resources and greater demand, encouraging more agencies to actively promote environmental education.

18.3 Case Study of Environmental and Outdoor Education in Taiwan

18.3.1 Program Background and Implementation Surroundings

This outdoor education case takes place in Kaohsiung, a predominantly industrial city in southern Taiwan. A hillside land approximately 11.23 square kilometers in surface area in downtown Kaohsiung had been conserved and was designated as a national natural park in 2011. Since Shoushan (Monkey Mountain) is situated near downtown Kaohsiung, there are extensive human activities, and many

Fig. 18.1 Formosa Macaque in the Shoushan area (Photo: Friendly SEED)

environmental issues have sprung from the interaction of the environment and people, such as the conflict between humans and wildlife. When facing environmental issues, the national natural park not only manages the park in accordance with the law but also tries to cooperate with private organizations to solve these conflicts through the promotion of environmental education.

According to a study conducted in 2013, the Shoushan region is home to nearly 1500 Formosan macaques (see Fig. 18.1) (Hsiu-hui & Shu-Wei, 2013). Since the activity areas of hikers and tourists and the monkeys are highly overlapped, coupled with the practice of feeding the monkeys in the past twenty years, the monkey's natural habits have changed, as they have started to beg tourists for food or directly grab food from tourists, leading to frequent incidents of human-monkey conflict (tourists have their food taken away, tourists scratched or bitten by monkeys, monkeys harmed by people, and monkeys involved in car accidents, and so on). How to influence citizen actions and awareness through educational activities, mitigating the conflict between humans and monkeys, has become an important task of the national natural park.

Shoushan National Natural Park cooperated with Friendly SEED to pass the environmental education facility site certification in 2015 and develop the "Walk with Formosa Macaque" outdoor education module, which is open to field trip applications from elementary schools to senior high schools. The program offers students the opportunity to learn the behaviors of monkeys through outdoor education to lower the chances of conflict, nurture a mindset of coexisting with wild animals, and understand related management measures of the public sector, building a natural site where people and monkeys can coexist.

18.3.2 Walk with Formosa Macaque Outdoor Program

Shoushan National Nature Park, located in the southwestern part of Kaohsiung City, Taiwan, is also known as the Macaque hill. Human-macaque conflicts occur quite frequently within the park. Some visitors even get hurt due to these conflicts.

Shoushan National Nature Park use environmental education as a management tool to minimize potential human-macaque conflicts and to let public get evolved with conservation business.

The program aims to help students to:

1. Understand the physiology, ecology, behavior, and body language of Formosa macaques.
2. Understand the impact of human feeding behavior on macaques.
3. Learn how to live peacefully with Formosa macaques.

The program is conducted mainly for elementary school students to senior high school students. There are also different programs for preschool children and adults. Table 18.1 provides an overview of its main activities.

Through collection of information before developing the program, we have found out that the human-monkey conflicts on Shoushan have been the result of human misconceptions of monkeys. Thus, we designed the program in order to gradually bust these myths through the program.

For example, the myth of "monkeys must be fed because there are no fruits in the mountain" sprung from the misconception that "monkeys eat bananas". We use a game-based teaching method and guidance of teachers to introduce students to all the foods wild Formosan macaques can eat in the mountain, busting the myth on the feeding habits of monkeys (see Fig. 18.2). In the first lesson, "A Closeup on Formosan Macaques," we help students to understand the feeding habits, foraging behaviors, physical characteristics, and other habits of Formosan macaques as the teaching objective. Through the aforementioned concept and the game-based teaching method, we can successfully bust the myths and correct the misconceptions on monkeys, establishing accurate knowledge and understanding.

As for the misconception that "monkeys will proactively attack people", we designed a game for the second lesson, "Facebook Account of Formosan Macaques". Through games and a group discussion, as well as physical performance, this lesson introduces students to the body language of monkeys, so they can understand which actions of people will trigger hostility, while also teaching students how to respond when they encounter monkeys in the wild, ensuring safety of both parties. Furthermore, we also use media like films, slideshows, news, and photographs, in the indoor part of the program to help students to learn the ecological behaviors of Formosan macaques and understand their ecological value.

Table 18.1 Program activities

Time	Units	Content
70 mins	Something about Formosa Macaques	Understand the physiology, ecology, behavior of Formosa macaques.
40 mins	Read Macaque facial language	Understand the facial and body language of Formosa macaques, so we won't misunderstand each other.
90 mins	Walk with Formosa Macaques	Walk into the wood and observe the macaques.
60 mins	Reduce the conflict	Learn how to get along with Formosa macaques.

Fig. 18.2 Understanding behaviour of the monkeys – indoor part of the program. (Photo: Friendly SEED)

The advantage of the indoor introductory part is that students can learn much about Formosan macaques within a short period of time. After all, it is difficult to learn all the feeding habits, body language, and ecological behaviors of monkeys through outdoor observation; however, if the program was conducted only indoors or in a built environment, students would never gain firsthand experience with nature, let alone the emotions of curiosity, understanding, and respect, triggered by their own encounter with nature, which are qualities we aspire to. Therefore, we first establish students' cognition of the habits of macaques, including appearance recognition, feeding habits, and interactive behaviors between macaques, such as hostility, friendliness, pet invitations, and other behaviors. In addition, students are taught how to respond if the macaques behave hostilely to the observer during the outdoor observation period.

The core part of the program takes place outdoors, where students can observe Formosan macaques in the wild. Students look for monkeys and observe their various behaviors from appropriate distances. In the wild, students must follow the rules of field observation, such as no approaching, no touching, and no loud disturbances. Moreover, students must also complete an observation chart (see Appendix 1). The chart shows us the details observed by students, while also allowing us to find out whether their perceptions of monkeys have changed after the observation (see Fig. 18.3).

The final discussion is a core aspect of this program (see Fig. 18.4). Because human-monkey conflict has gone on for so many years, a high percentage of people are hostile to monkeys. We carry out in-depth discussion on the conflict between humans and wild animals, hoping that students can understand that a certain level of danger exists if they come into contact with wild animals, as well as the reasons for people's interferences with and misconceptions of Formosan macaques, ultimately learning how to live with Formosan macaques. In this lesson, through news footages, students can see the misconceptions and perspectives about Formosan macaques among the public and media. We guide students to consider from diverse angles whether the news stories are all humancentric, overlooking the nature of monkeys. For this part of the program, we designed questions about human-monkey interactions, such as "How do you think you should get along with the macaques?

Fig. 18.3 Surveying the macaques. (Photo: Friendly SEED)

Fig. 18.4 Concluding discussion serves as both review and commitment phase of the program. (Photo: Friendly SEED)

What would you want to do if you encountered someone feeding the macaques? Students separate into different groups to discuss these questions and write on posters. We can see how students' attitudes toward monkeys change, as they agree that it is necessary to redefine how humans should coexist with monkeys and internalize this idea into their own values.

Table 18.2 Post-program evaluation data

	Walk with Formosa Macaque (N = 1120)	average (Maximum 5 points)
1	Formosan macaques have lots of natural foods to eat in nature.	4.6
2	Formosan macaques do not need human feeding to survive in nature.	4.7
3	I know how to get along peacefully with Formosan macaques.	4.5
4	We have to observe them in a proper distance, at least 10 m.	4.5
5	Staring at Formosan macaques is an unfriendly behavior.	4.5
6	I would like to introduce Formosan macaques to my family and friends.	4.3
7	I am devoted to participating in outdoor teaching activities today.	4.5
8	I like today's outdoor program.	4.6

18.3.3 Program Evaluation

The evaluation of this program is not limited to tests or questionnaires. In addition to a questionnaire after program completion, there are also informal or non-written review points throughout the course of the program. These include: onsite observation of teachers, Q & A, outdoor observation chart, in-class discussion and review, and a post-program questionnaire. Different types of evaluation are used in different stages of the program. The most common feedback by students, in addition to gaining clear understanding on the habits of monkeys, is that they no longer dislike or are afraid of monkeys. Many students have expressed after the class that their impression of Formosan macaques has changed, and being able to read the monkeys' body language has helped them to more freely and alertly appreciate wild animals in the wild.

The following figures (see Table 18.2) are post-program evaluation data of students participating in this program from 2016 to 2021. The total number of students is 1120.

From the quantitative data below, we can see that most participants have gained a clear basic understanding of Formosan macaques after the program and should have a positive attitude and awareness in inverse items as well.

18.4 Conclusion

One of the objectives of Friendly SEED's long-term assistance in Shoushan National Natural Park's promotion of environmental education is to help national natural parks solve environmental problems through education. Of course, the problems are deeply rooted in myths shared by society cannot be easily and quickly solved through informal education, but the evaluation data give us evidence that the program can influence viewpoints, leading to different behaviors. The human-monkey conflict program at Shoushan National Natural Park has added diverse content since 2013 and has been expanded to accommodate a wider audience from K1-K12 students, college students, general public, and enterprises. Based on different learning characteristics, the program has devised a series of classes on human-monkey conflicts and even developed a "pop-up" performance to convey important concepts of human-monkey coexistence at locations with a large tourist presence during holidays.

This environmental education program that focuses on the "conflict between humans and wild animals" starts with busting the myths on monkey's habits, then introduces the influences of human's action of feeding on the biological habits of monkeys, and finally delves into the factors of human-monkey conflict for in-depth discussion, guiding learners to develop their own environmental thinking. Combining indoor classes and outdoor activities is effective in achieving the program's objectives. Field observation plays a key role in this program and allows participants to verify in the wild the knowledge they have learned in the first half of the program. Then they take their observations of the interaction between humans and monkeys back to the discussion on values and behaviors during the following activity. The data collected serve as the source of information for their concluding thoughts. Outdoor environmental education is not the only way to influence people, but it offers an opportunity to gain firsthand experience and observation, providing students, agencies, enterprises, and the public a way of understanding the issues as well as a platform for further discussion and learning.

Acknowledgments The Ministry of Education has promoted outdoor education implementation plan 2016–2019.

Appendix 1: Observation Chart

Please select a macaque, carefully observe its appearance and behaviour, and record it as completely as possible in the following chart.

DATE		TIME		WEATHER	
MY NAME		PLACE			
Named the macaque you observe		Gender of Macaque	□ Male □ Female		
Record the facial features of macaques 					
What is the macaque you are observing doing? Please describe or draw a picture of its behavior.					
Please carefully describe or draw the environment around the macaques					
What are your thoughts after observing the macaque?					

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Chapter 19
The GLOBE Pulchra Program: Blurring the Boundaries Between Indoor and Outdoor, Science and Society, and Onsite and Online in the COVID World

Jan Činčera

19.1 Introduction

The pandemic situation in 2020–2021 had a substantial adverse effect on outdoor environmental education in the Czech Republic. As part of the national strategy to slow the speed of the pandemic, all types of schools were on lockdown for most of that academic year, with students and teachers learning to use online communication tools.

As school field trips and collective outdoor events were prohibited, many Czech residential centers offering outdoor environmental education programs suffered financial losses. This situation launched debates on new forms of environmental education, including reconsidering the role of outdoor environmental education programs. While some centers canceled their programs, intending to restart them again in the same format when the lockdown ends, other centers tried to adjust their programs to the new situation. Among the latter was the Czech educational center Tereza, which coordinated a group of Czech schools involved in the international citizenship inquiry-based GLOBE Pulchra Program.

Tereza is one of the most influential environmental education centers in the Czech Republic. This center coordinates international programs in the country, including EcoSchool, GLOBE, and Youth Reporters for the Environment. Tereza actively promotes some crucial trends in environmental and sustainability education, such as outdoor learning, the emancipatory approach, inquiry-based learning, and others.

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_19

19.2 Context

Pulchra is an international program involving 54 schools from 10 European Union countries. In the Czech Republic, six schools participated in the Program. The Program aims to engage students in inquiring about their community's sustainability needs, support students' cooperation with the scientific community and other community partners, and promote a student action targeting the investigated issues. The Program draws on a mixture of methodological approaches, including inquiry-based learning, place-based education, and education for environmental citizenship (Tereza, 2021a, b).

The methodological approaches applied in the Program were not completely new in the Czech Republic, but they were not yet widespread, either. Inquiry-based learning, which is used in the first part of the Program, has been discussed for more than 15 years in the Czech Republic. However, despite its relative popularity, just a small number of elementary schools employ this kind of environmental learning (Činčera et al., 2016).

Similarly, place-based education and education for environmental citizenship (Hadjichambis et al., 2020) are not unknown concepts in the Czech Republic. However, while most Czech schools integrate their region in their curricula in some ways, only a minority of the schools allows students to actively engage in inquiring about the region or participate in a community-based action targeting sustainability issues (Činčera et al., 2016).

Based on an evaluation of other similarly focused Czech programs, several issues have emerged during the programs' implementation. While most scholars highlight the importance of students' participation in decision making (Reeve, 2006a, b; Hale, 2015; Hofferber et al., 2014, 2016), students' projects and the methods of their implementation are often designed by teachers. This is usually due to the lack of teachers' trust in students' ability to work independently and the lack of teachers' self-efficacy (Cincera et al., 2019a, b). Teachers often deflect students from working on potentially controversial projects, even if the projects are salient for local sustainability, and lead students to undertake broadly accepted but environmentally less beneficial projects (Lousley, 1999; Simonova et al., 2019). Action-based programs are often introduced as voluntary activities conducted in the students' free time. This leads to a feeling of division between the involved and non-involved students at the school and the "us-versus-them" sentiment (Winklerova et al., 2018). In this chapter, we look at how these issues influenced the implementation of the Pulchra Program.

19.3 The Pulchra Program Description

In the Pulchra Program, small teams of elementary and secondary school students chose a local sustainability issue to investigate and remedy. Of the six involved Czech schools, two focused on recycling in their community, and one school tackled the emerging drought caused by climate change. Two other schools wanted to improve the state of the local green areas and one school chose to work on a set of smaller projects, including cleaning up the local forest, planting trees, and building educational trails.

In the next steps in the Program, students investigated the selected issue. At most of the schools, they cooperated with local experts or university teachers. For example, some of the involved students learned to analyze ecological data from digital maps. Most of the schools also initiated a partnership with the representatives of the local community. Other students promoted their projects on social networks and tried to engage the local community. In the final steps, students conducted actions to remedy the investigated issues.

Let's look at the example of one of the involved schools. After the initial discussion, the students decided to focus on the effectiveness of recycling in the local area. To make a change, the students mapped the distribution of the recycling bins in their community. They also engaged the local citizens in this process and conducted a survey to collect their ideas on what can be changed. Based on the analysis of the collected questionnaires and the digital maps, the students prepared a proposal for the optimization of the distribution of the recycling bins in the area. They presented their proposal to the local authorities and also to the local citizens. The local representatives appreciated the students' work and, according to the students' reports, took their work seriously. When the Program was evaluated, the implementation of the proposal was still in process. However, there was a good chance that it will be implemented, and the students will experience that a real-life change has been made through their effort.

Optimization of the recycling in their community was also the aim of a project implemented by another school participating in the Pulchra Program. Here, students reflected on the lack of recycling bins near their school and started offering new places for recycling stations in their community.

The projects implemented by the other schools focused on improving the local green areas. In response to climate change, the students at one of the schools decided to build a small pond in the schoolyard. Another group of students studied what flowers are most attractive for butterflies and made part of their schoolyard into a butterfly meadow.

19.4 Experience and Evaluation

19.4.1 The Process of the Pulchra Program Implementation: Dealing with a Lockdown

The implementation of the Pulchra Program was accompanied by a mixture of enthusiasm, successes, and barriers. When the Program was about to be finalized, most of the participating students and teachers were highly satisfied with the experience and the results of their work. At most of the schools, they also planned follow-up projects for the next academic year.

At the same time, both the students and the teachers reflected on the Program as being demanding in terms of time and professional capacity. In particular, the students' cooperation was negatively affected by the pandemic. As the students spent almost the whole academic year under lockdown, they had to plan their projects on online communication platforms. While this appeared to be manageable, both the students and the teachers reported a gradual decrease in motivation. As a result, some of the teachers felt the need to take over the initiative to lead and finish the selected projects. The lack of face-to-face meetings also negatively impacted the social climate in the students' teams. As some groups consisted of students from different classes, the teams were not used to cooperating, and the online environment did not allow them to solve the emerging group-dynamic issues effectively.

Therefore, some teachers took a dominant position and provided the students with only a limited opportunity to make decisions. This tendency was further supported by the teachers' lack of experience with providing students with autonomy in designing their projects. However, the participative approach was the prevailing one in other groups, which illustrates that – even in the demanding pandemic conditions – the students were able to make sound decisions and lead their projects when they were allowed to do so. Particularly the older groups of students seemed to be able to work very autonomously when the teachers provided just the general framework and offered their assistance when needed.

As we described, the pandemic situation made the process more challenging, but it was still manageable. Regardless of the issues mentioned, the schools successfully implemented their projects. Most of the groups found this experience beneficial and reported various positive effects on their learning.

19.4.2 The Learning Effects of the Pulchra Program: Empowerment and Motivation for a Change

All participating schools reported that the Pulchra Program helped them develop their interpersonal competence. The challenges they faced and the need to coordinate their work provided opportunities to learn by experience. Additionally, the teachers often reported positive impacts on the students' intrapersonal competence.

To implement their projects and to do this in the given context, the students needed to overcome their perceived limits (e.g., in communication with adults) and do what was necessary to achieve shared goals.

The groups targeting the local sustainability issues developed their strategic competence and enhanced their empowerment – they could see that they could make a fundamental change in their community, and they appreciated it. As one boy reported:

> *I learned that the authorities are not all bad, they are not bogeys, they are normal people I can speak with, and if we come with a proposal, they will help us. That this is not [something like], to write to the authorities, gosh, I can't manage it, but [it is] let's learn how to do it.*

Some of the students reflected on how they were proud to do something meaningful for their community and how they realized their responsibility for the environment:

> *We cannot only 'take', we must also 'give' and try to help nature.*

Looking carefully at the emerging patterns, it could be said that in comparison, the students from the groups who were provided with more autonomy reported more frequent and more profound positive impacts of the experience on their competence than did the students from the teacher-directed groups. However, even these students reported some learning in the area of specific knowledge and skills connected with the projects they participated in.

Moreover, the teachers involved also reported they that learned something new. Some of them were surprised to see that their students could work much more independently than they had supposed. This experience motivated them to challenge and probably change their teaching style:

> *It was a surprise for me how much students are able to manage on their own and for sure, much of their potential remains unutilized.*

19.5 Conclusion

The experience with the Pulchra Program allows us to see several patterns possibly heralding some ongoing changes in outdoor environmental education in the post-COVID times.

Due to the restrictions during the pandemic, students flexibly switched between in-school, outdoor, and virtual environments while participating in the Program. The boundaries between the environments were blurred – some tasks needed to be done online, some required the students to go outdoors and directly investigate the area, and some could be conducted in the classroom when the pandemic situation improved. This may represent a future trend in outdoor environmental education. We can imagine that in future outdoor environmental education programs, students will flexibly switch between online, outdoor, and onsite to get the best of all worlds.

At the same time, we could see that the long-term necessity to limit students' interaction to the online environment caused specific problems, such as loss of motivation and a limited ability of the group to solve its group-dynamic issues. This highlights the importance of keeping the element of face-to-face meetings as an essential part of the learning process.

The participative approach seems to be another challenge in the implementation of similar programs. As we could see, it was – despite the demanding conditions – implemented at some schools, while being partly replaced by a teacher-centered approach at other schools. While the participative approach has its clear advantages, its implementation may depend on contextual factors (e.g., the school culture, teachers' experience). In light of this, we may suppose that rather than purely one-approach strategies, a mixture of instrumental and participative approaches would be more common in the field of outdoor environmental education.

Finally, the Program's learning effects on students' competencies overshadowed the Program's impact on particular types of students' knowledge or skills. While this finding is specific for the presented Pulchra Program, the importance of competence development in outdoor environmental education programs may prevail over their other learning effects.

Some of the aspects of the Pulchra Program may be indicative of the changes emerging in outdoor environmental education. Both its challenges and successes may shed light on how this area will develop in the coming years.

Acknowledgments The chapter has received support from the project "Výzvy udržitelné společnosti optikou humanitních a sociálních věd" [The Challenges of a Sustainable Society from the Perspective of the Humanities and Social Sciences] (MUNI/A/1460/2021).

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Chapter 20
Conclusion: Emerging Trends in Outdoor Environmental Education in the Post-COVID World

Jan Činčera, Daphne Goldman, Iris Alkaher, Bruce Johnson, and Michal Medek

20.1 What Is the Role of OEE in the Contemporary Society?

We started this book with the story of how Jan needed to explain why environmental education should be supported by the Czech government (Chap. 1). In their specific ways, most of the book's authors offered a similar answer to this question: the relationship between society and nature does not work well and this is the source of sustainability issues in the contemporary world. The goal of OEE is to provide a remedy. With this intention, OEEPs promote nature protection, develop students' potential to live caring and responsible lives (see Chap. 5), and challenge the ways the current educational system works. To achieve this, OEEPs utilize an outdoor—preferably natural—environment in which most of the learning occurs to ensure that the learning is focused, immersive, and authentic.

However, we also found a variety of perspectives among the book's authors who differ in how they situate OEE within formal educational systems, in how they

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6_20

Table 20.1 Differences and similarities among various OEE approaches

Focus	Nature protection	Environmental learning	Transformative learning	School–community partnership
Mission	Protecting localities and species	Developing environmental values, knowledge, and behavior	Facilitating transformation on the social and personal levels	Empowering and promoting environmental citizenship
Relationship with formal education	Implemented by an external organization, can be integrated into the curricula	Often implemented by an external organization, can be integrated into the curricula	Critical alternative to instrumental, teacher-oriented approaches typical of formal education	Joint school–community implementation, transforming school practice
Power holders	Environmental experts	Educational experts	Place, students, and program leaders	Place, students, teachers, and community
Activities	Designed	Designed	Emerging	Designed and emerging
Preferred settings	Outdoor	Outdoor	Mixed	Mixed
Main partnerships	Experts–visitors–protected area	Nature–teachers–students	Place–nature–learning community	School–community
Human–nature relationship	Disrupted, nature protection needed	Disconnected and re-connection needed	Inseparable or disconnected and reconnection needed	Nature as part of community
Associated approaches	Nature studies, conservation education, environmental interpretation	Environmental education, earth education	Wild pedagogies, childhoodnature, forest schools, Critical place-based education	Place-based education, education for environmental citizenship
Example	Walk with the Formosa Macaque	Earthkeepers	Maple Ridge Environmental School	Pulchra

interpret the human–nature relationships, in how they link outdoor and indoor settings, and in how they suggest the programs should be designed (see Table 20.1).

20.2 Dilemmas and Questions Regarding OEE

20.2.1 OEE Mission in the Context of Formal Education

The relationship between OEE and formal education is a source of tensions. OEE tends to disrupt standardized formal education: it calls for leaving indoor settings, for transferring control over the learning process to someone else, and for certain

specific methods. Moreover, the goals of OEE may not necessarily be linked with the goals of the national or school curricula; they may be rooted in the particular needs of nature protection or express a vision that challenges the dominant educational and social systems.

From one perspective, OEE may be considered a tool for *nature protection*. Chapter 18 provides an illustrative example of a program focused on the protection of the Formosan macaque. Chapter 7 deals with environmental interpretation, a widespread approach rooted in the need to protect natural areas through regulating visitor behavior. The vignette in this chapter describes the unique features of an interpretation program located in a karst area and aimed at the area's protection.

Both programs have apparent learning effects on the participants. At the same time, the *instrumental* aspect of learning intended as a tool for achieving goals other than learning gives these programs certain distinctive features. The design of both programs is expert-based. The importance of careful planning of what to say and how to say it is evident in the interpretation program. Similarly, the authors—or leaders—of the programs are experts on the locality and its protection. Both programs may certainly be fully compatible with the school curricula. However, they are not tailored to the specific needs of schools. Instead, they focus on the needs of nature protection.

Other programs described in this book take a different approach. Their starting point is not the protection of a particular locality or species but of the environment on a general level. While these programs are situated in specific settings that are sources of real-world examples, the programs are universal in that they can be run in any outdoor environment. They do not focus on issue-specific knowledge or attitudes but rather on developing environmental values and a general understanding of how nature works (Chaps. 8 and 17) or on encouraging active citizenship by incorporating the environmental perspective into decision making (Chaps. 2 and 19). While the first type of OEE was rooted in nature protection, this type is connected to *the environmental movement*, aiming to move society toward sustainability.

The relationship between these programs and school curricula may be straightforward but it may also lead to tensions. The tendency to develop students' values or influence their behavior (Chap. 8) may be seen as going beyond the scope of school curricula. At times, this can lead to lower interest in these programs (Chap. 8) or lower political support for them (Chaps. 3 and 17).

For some of the book's authors (Chaps. 6, 12, 13, and 15), OEE should be *a transformative* force challenging contemporary society and providing a more meaningful alternative based on non-anthropocentric, non-dualistic, and wild-oriented approaches. Profound social transformation is needed to remedy the human–nature relationship; such a process calls for transformative learning that is not compatible with the current dysfunctional educational system.

These authors suggest building an alternative to the existing educational structures rather than including specialized programs in the school curricula. The Maple Ridge Environmental School provides a good example: formal education is interpreted as a source of trauma that needs to be remedied. This approach does not create learning units that can be infused into formal school curricula to enrich them

(Chap. 18). Instead, it challenges the existing system and calls for its profound transformation by offering a radical alternative. Similarly, the British Forest School Movement (Chap. 10) presents itself as an "alternative pedagogy".

Compared with the nature protection and the environmental learning types of OEE, OEE based on such transformative learning prefers less structured activities emerging from a time–space, student-centered approach, with the crucial role of place as one of the teachers (Chaps. 10 and 12).

Finally, the fourth type of OEE, place-based education (Chaps. 2, 9, and 19), is designed to fit the formal school curricula and initiate the process of changing schools from within. Place-based education calls for linking schools with their social and local *communities*. This form of learning is focused on local issues, and the curricula emerge from the local community's features and needs. The programs tend to be based on a mixture of methods, including students' projects and service learning.

The approaches used in place-based OEE may clash with top-down school curricula, especially when standardized tests drive much of the learning in schools (Chap. 3). The programs can also challenge many sustainability issues, including social injustice (Chap. 9) or environmental problems (Chap. 19). As a result, they often aim to empower students as *environmental citizens* rather than focusing directly on their environmental values or behavior regulation (Chap. 2). The process of re-orientating a school toward place-based education can bring about a profound change—it can help a school initiate new partnerships, promote cooperation among teachers, and increase students' involvement in the decision-making at the school.

While these four types of OEE share many features, they also differ in certain respects. Let us look at some of the differences first.

20.2.2 Human–Nature, Outdoor–Indoor Questions

Understanding the human–nature relationship provides one of the exciting differences among the types of OEE described above (OEE focused on nature protection, environmental learning, transformative learning, and place-based education). The starting point for the nature protection and environmental learning approaches in OEE is the human–nature disconnection, which is identified as the primary/root source of contemporary environmental issues (Chap. 2). Thus, re-connection is crucial, either on a specific level by making seemingly distant natural areas or protected species personally relevant and essential or on a general level by making one's connection with the nature part of one's identity.

The other authors of the book provide a slightly different perspective. Place-based education focuses on the re-connection of schools with their communities. Here, nature is interpreted as an inseparable part of the community and vice versa. As a result, the idea of disconnection seems to be shifted into a different light: environmental issues may not necessarily lie in our disconnection from nature but rather in our disconnection from the place we live in, which is often caused by problematic,

place–non-responsive formal education. By re-connecting this relationship, students develop their motivation and capacity to care for their place and, consequently, for the world.

However, the idea of the human–nature separation may also be seen as artificial. As Karen Malone (Chap. 13) argues:

> We are all merely matter circulating with and through bodies, places, and time.

Similarly, Michael Paulson (Chap. 6) deconstructs the differentiation between culture/nature and indoor/outdoor. Here, we are offered a very different understanding of how OEE should help to re-connect humans and nature: by avoiding the very idea that such a sharp disconnection could exist. Paulson says,

> [t]here is no absolute difference between indoors and outdoors, only relative movements from one space to another. All environments are more or less indoors and outdoors and are part of the same big spaceship Earth that is manipulated technically by all humans. (Chap. 6)

Accepting this can take us to new perspectives on OEE practice. Based on such perspectives, OEEPs may not necessarily prefer outdoor settings, as has been typical for nature protection and environmental learning programs. Similarly, OEEPs would not be limited to pristine natural settings (while such settings seem influential, as mentioned in Chap. 4) but would involve the whole community, including its socio-cultural dimension (Chap. 9).

The tendency to blend outdoor and indoor settings seems to be one of the emerging trends in contemporary OEE. While the first earth education programs (Chap. 8) (Acclimatization, Sunship Earth) were situated outdoors, more recent programs link the outdoor program parts with pre-program or follow-up school work or assume a mixture of outdoor and indoor settings to enhance the effectiveness of the programs.

Another emerging trend is incorporating the virtual environment. Despite concerns that digitalization may be one of the reasons for human–society disconnection, there is evidence of a positive impact of a (nature-focused) virtual immersive environment on nature connectedness (Chap. 4). If we accept that the sharp division between society and nature is artificial, we can also accept a view of OEE as encompassing the outdoor, indoor, and virtual dimensions of our being-in-the-world.

In Chap. 19, we could see how all these three dimensions could be blended into one program. In Chap. 7, Michal Medek discussed the possibilities of a digital interpretation of natural heritage.

It may be that blurring the boundaries between these dimensions of our being-in-the-world can indicate the future of OEE. This trend may call for re-framing the whole field, perhaps as "multiple-worlds environmental education".

20.2.3 The Question of Power and Content

The distribution of power between the adults and the students is another cross-cutting theme in this book. While some of the book's authors present an adult-centered approach (Chaps. 7 and 8), others call for shifting more responsibility

toward the student participants (Chaps. 9, 10, 12, and 13). Such a decision has profound consequences for OEEP design, ranging from a carefully prepared set of activities (Chaps. 7 and 8) to providing students with more freedom in how they learn from their nature experience (Chaps. 10, 13, and 15). Generally, the approaches focusing on nature or environmental protection seem to highlight the role of experts, either scientific or educational, in setting the objectives and activities. In contrast, authors who support the idea of transformative or community-based learning express openness to what the students, the place, the community, or the specific time–space bring in. In these approaches, the OEEPs are co-created by all the stakeholders, including the students.

At the same time, these differences are somewhat fuzzy. For example, while both earth education (Chap. 8) and thematic interpretation (Chap. 7) seem to be dominantly expert-based, they include some elements of the participatory approach. For example, students have some choice in how to earn their final two keys in the Earthkeepers Program (Chap. 8). Similarly, Medek (Chap. 7) refers to engaging other stakeholders (not just experts) in the process of interpretive planning.

Likely, both poles—the expert-centered (pre-designed) one and the student-centered (co-created) one—will continue to play a role in OEE in the future, with various programs somewhere *in between.* Here, we can use the diversity of approaches as a substrate for mutual inspiration and qualitative growth.

20.3 Conclusion: How Should OEE Adapt to the Needs of Our Fragile and Uncertain Times?

Openness and flexibility seem to be crucial for OEE's development and survival. As we have already discussed, OEEPs in the future will not be necessarily outdoor only and may encompass outdoor, indoor, and virtual environments. Additionally, OEEPs may benefit from a pragmatic mixture of approaches, such as combining expert-based and student-centered learning or integrating pre-designed activities with those that emerge from a particular group, place, and situation.

This process may lead to blurring the boundaries between various types of environmental education. Most likely, all environmental and sustainability education should take place at least partially outdoors, and outdoor environmental education should incorporate at least some elements of the indoor and virtual environments. As a result, OEE may lose its unique feature and merge with other environmental and sustainability approaches. If this happens, promoting the outdoor dimension in formal education and transforming this dimension from a rare adventure to a learning routine may become OEE's ultimate success.

As Chap. 2 reminded us, OEE may further benefit from broadening its ambitions from aims related to nature connectedness to including more socially focused aims, such as competence for environmental citizenship. In many respects, OEE may provide a remedy for a wide range of social ills in the contemporary society, addressing

the distrust of science (Chap. 14) or strengthening our capacity to promote change (Chap. 19). Clearly communicating OEE's social benefits may be essential for gaining and maintaining political support for this field (Chap. 3).

Finding a proper balance between idealism and pragmatism may also be crucial for the future of OEE. Accordingly, OEE providers outside the formal educational system need to find their niche inside the system to maintain important political support (Chap. 3). As the story described in Chap. 17 demonstrated, the lack of such support may critically endanger even a well-established OEE center with excellent programs.

However, this does not mean that OEE should give up its role as a critical voice. As Chap. 16 illustrated, an organization providing OEE may draw on various approaches—it may promote nature conservation goals and at the same time question the status quo by cultivating students' environmental citizenship. A balance between these roles may be necessary.

We started with the question of why OEE should be supported by the government. As we can see, the relationship between OEE and the contemporary society is complex: OEE both strengthens and challenges the existing social system. We believe that both these roles of OEE are crucial. Democratic societies flourish when they listen to their supporters as well as their constructive critics. In this light, OEE and democracy seem to reinforce each other. Perhaps, this is the best answer we should share with the world.

Acknowledgments The chapter has received support from the project "Výzvy udržitelné společnosti optikou humanitních a sociálních věd" [The Challenges of a Sustainable Society from the Perspective of the Humanities and Social Sciences] (MUNI/A/1460/2021).

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J. Činčera et al. (eds.), *Outdoor Environmental Education in the Contemporary World*, International Explorations in Outdoor and Environmental Education 12,
https://doi.org/10.1007/978-3-031-29257-6