Bridging the youth-nature divide through secondary forest schools

Insights from Sweden and Canada

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Abstract

Universal issues of biodiversity loss, climate change, and political divide underscore the need to prepare future generations with the knowledge and skills necessary to address sustainability challenges and foster forest stewardship. This study explores the implementation of place-based education (PBE) principles within forest school programs for youth ages 13–16 across Sweden and Canada. Grounded in critical pedagogy, this research identifies best practices within forest schools, for fostering sense of place, ecological literacy, and student engagement while navigating institutional and political barriers. An ethnographic, comparative case study methodology was utilized. Data were collected through 22 semi-structured interviews with forest school stakeholders and corroborated with 500 pages of pedagogical documentation.

The findings demonstrate that forest school programs can serve as powerful vehicles for fostering youth-nature relationships, particularly when they center local contexts, community partnerships, and student agency. While both Swedish and Canadian cases revealed strong alignment with PBE principles, implementation varied significantly based on governance structures, access to forest spaces, educator training, and institutional recognition. Sweden's centralized education system facilitates national cohesion but can constrain localized adaptation and Sámi knowledge inclusion. Canada's decentralized model allows for regional flexibility, but often results in unequitable access and under-resourced forest school programming, especially for marginalized communities.

Best practices identified across both cases include (1) frequent and consistent engagement with local forest landscapes, (2) interdisciplinary and experiential curriculum design, (3) reciprocal relationships with community and Indigenous knowledge holders, and (4) opportunities for student-driven inquiry. Structural barriers, such as curriculum rigidity and colonial legacies, continue to limit the transformative potential of forest schools. This study contributes to growing discourse on equitable and community-responsive pedagogy, by centering the experiences of secondary students—an age group often overlooked in forest education research. It underscores the need for systems and policy frameworks that are not only ecologically grounded, but culturally sustaining and critically reflexive. By examining how PBE takes shape in diverse socio-political landscapes, this study offers educational guidance for cultivating forest stewardship among youth.

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Abbreviations

Abbreviation	Description
CMEC	Council of Ministers on Education, Canada
ESD	Education on Sustainable Development
GDPR	General Data Protection Regulation
NGO	Non-Government Organization
PBE	Place-Based Education
TEK	Traditional Ecological Knowledge
TRC	Truth and Reconciliation Commission of Canada
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples

1. Introduction

In the face of global forest management issues, such as biodiversity loss, climate change, and political polarization, there is an urgent need to equip future generations with the knowledge and skills necessary for addressing socio-ecological challenges (Boileau & Dabaja, 2020). Strengthening the connection between youth and their local forests is foundational to fostering values of stewardship and sustainability (Dickinson, 2011; Harris, 2021).

Regular forest access contributes significantly to cognitive, emotional, and moral development, laying the groundwork for environmentally responsible behaviours in adulthood (Asfeldt et al., 2022). Place attachment, developed from routine and meaningful forest interactions, supports youth in developing a sense of connection and commitment towards their local communities (Bertling, 2018). Despite these critical outcomes, many conventional education systems tend to limit student[1] engagement with nature, resulting in youth who are increasingly disconnected from their local forests (Gruenewald, 2003). Widening educational inequities, including resource asymmetries, present further barriers to developing necessary youth-nature relationships (Gruenewald, 2005; Dickinson, 2011).

Forest school offers an alternative to conventional education by tailoring curricular goals to the teachings and knowledge of local forest landscapes (Harris, 2017). Defined as educational programming for learning within forest settings, forest school reimagines learning as relational, place-responsive, and justice-oriented (Harris, 2021). Across different political and cultural contexts, forest school curriculum often varies greatly, therefore, forest schools represent and employ an extremely diverse range of educational approaches (Harris, 2017). While maintaining flexibility within forest school curriculum is necessary for accommodating different regional contexts, a single guiding framework could allow for more widespread and long-term adoption.

Premised on the idea that education is most impactful when it is rooted in the lived experiences of students and connected to the places they inhabit (Smith, 2002; Semken & Freeman, 2008), Place-based education (PBE) offers an adaptable approach for learning alongside and through nature (Smith, 2007). Central to PBE is the notion of ‘place’ as a co-constructed, dynamic relationship (Gruenewald, 2005; Bertling, 2018). Forest schools which draw upon PBE, as a pedagogical framework, are informed by ecology, culture, and community, and

[1] The terms “student” and “youth” are used interchangeably to describe the teenage demographic attending secondary schools.

provide educational capacity for bridging the youth-nature divide (Smith & Sobel, 2014; Harris, 2021).

Rather than relying solely on classroom instruction, students participate in fieldwork and community-based projects that provide real-world applications of their learning (Boileau & Dabaja, 2020; Mikaels, 2019). These activities, especially when conducted regularly, encourage curiosity, problem-solving, and critical thinking, as students gain first-hand experience with sustainability and stewardship practices (Boileau & Dabaja, 2020; Harris, 2021; Knight & Luff, 2014). When students actively interact with the landscape, rather than learning about it in isolation, they form stronger connections to place (Beames & Atencio, 2008; Dickinson, 2011; Gruenewald, 2005; Waite & Goodenough, 2018).

Sweden and Canada were selected as cases for this study based on historical and current reliance upon forests for livelihood, shared values around environmental education, and contrasting educational governance systems (Breiting & Wickenberg, 2010; Iversen, 2024; Tuck et al., 2014; Wooltorton et al., 2020). Both countries are home to diverse forest ecosystems as well as rich Indigenous knowledge systems. This heterogeneity, both within and across nations, has resulted in substantially different educational policies and approaches (Breiting & Wickenberg, 2010; Bowra et al., 2020; Karrow & DiGiuseppe, 2019).

1.1 Research aim and questions

This research aims to deepen understanding of how PBE is conceptualized and practiced within diverse educational contexts. Grounded in PBE theory, I will employ an ethnographic, comparative case study approach to explore how forest schools can foster meaningful youth-nature relationships. I will investigate if and how PBE is included across Swedish and Canadian forest school programs for youth ages 13–16, with particular attention to social, cultural, and institutional factors. My inquiry is guided by the following research questions:

1. What are the key principles of PBE, as defined by the most relevant literature?
2. If at all, how do the selected cases implement or draw from PBE principles?
3. What constitutes best practice in PBE, and how can it be measured within the context of secondary education?
4. What factors, whether facilitative or obstructive, influence PBE implementation in each case?

2. Theoretical Underpinnings

This section provides an overview of the theoretical underpinnings for PBE, and its application within forest school programming. First, I examine how place is conceptualized in educational theory, distinguishing between place and non-place as critical frameworks for understanding PBE. I then explore place attachment, community engagement, and experiential learning as fundamental concepts of PBE. Finally, I highlight the role of critical pedagogy in addressing settler-colonial structures influencing education.

2.1 Foundations of Place-Based Education

Prior to the existence of academic institutions, human learning was an inherently place-based process (Seawright, 2014; Smith, 2002; Tuck et al., 2014). As schooling has become more dependent upon standardization, there has been an institutionalized push to systematically measure educational practices and outcomes (Beames & Atencio, 2008; Bertling, 2018; Coughlin & Kirch, 2010; Dickinson, 2011; Gruenewald, 2005; Seawright, 2014). Consequently, there are numerous working definitions for PBE, which allows for both nuance and confusion (Yemini et al., 2023). Achieving accessible and meaningful youth forest education therefore involves defining, characterizing, and contextualizing PBE.

2.1.1 Defining 'Place'

In order to describe PBE, it is vital to understand 'place' and how it relates to pedagogy. As a product of environment, culture, and identity, none of which remain temporally or spatially stagnant, place is intrinsically fluid (Bertling, 2018; Coughlin & Kirch, 2010; Dickison, 2011; Semken & Freeman, 2008; Semken et al., 2017; Wright et al., 2021). This is evident from the diversity of PBE approaches and application outlined in the literature (Yemini et al., 2023).

Place is deeply rooted in the reciprocal relationships between people and nature (Dickinson, 2011; Semken & Freeman, 2008; Wright et al., 2021). Multiperspectivity should exist within place, since emotional connection is fostered differently for everyone (Bertling, 2018; Coughlin & Kirch, 2010). If the notion of place cannot be considered through this lens, there becomes a risk of cultivating what has been coined as 'non-place' (Bertling, 2018; Dickison, 2011; Gruenewald, 2005). Non-place is defined by the absence of connection and depth in one's surrounding environment (Bertling, 2018; Dickison, 2011; Gruenewald,

2005). Further, non-place belittles human-nature interdependence, while erasing social and emotional ties to our surroundings (Dickison, 2011). In addition to a lack of versatility and profundity in human relations with nature, non-place is the result of rapid exploitation (Bertling, 2018). Eliminating our perceived connection to local and global landscapes, coupled with the exhaustion of natural resources, devalues stewardship within society (Gruenewald, 2005).

Through an understanding of place, we arrive at place attachment theory– the ways in which connection to place strengthens the learning process (Bertling, 2018; Cumming & Nash, 2015; Harris, 2021; Semken & Freeman, 2008; Wright et al., 2021). Connection to place is also referred to as a sense of place (Coughlin & Kirch, 2010; Gruenewald, 2005). Sense of place, driven by emotional and cognitive relationships, contributes to greater responsibility and appreciation for one's surroundings (Coughlin & Kirch, 2010; Gruenewald, 2005; Harris, 2021; Semken & Freeman, 2008; Wright et al., 2021).

A common barrier to place attachment within traditional school systems is an excess of structure and control, which results in a sense of non-place (Beames & Atencio, 2008; Bertling, 2018; Dickinson, 2011; Gruenewald, 2005). Non-place within an academic setting can lead to superficial participation and a lack of formative learning (Beames & Atencio, 2008; Bertling, 2018; Coughlin & Kirch, 2010; Dickinson, 2011; Gruenewald, 2005; Seawright, 2014).

2.2 Place-Based Education in Forest Schools

It is apparent that PBE, which promotes stewardship and community engagement among other behaviours, are best implemented on the landscape (Harris, 2021; McInerney et al., 2011; Powers, 2004; Tuck et al., 2014). The idea of relational ontology, wherein subjects and settings are solely defined by their relationship to one another, best describes the need for human-nature coexistence– both in educational setting and approach (Coughlin & Kirch, 2010; Dickinson, 2011; Semken & Freeman, 2008; Wright et al., 2021). In order for students to develop a vested interest in their surroundings, frequent time spent in nature is essential to the learning process (Bertling, 2018; Harris, 2021).

For these reasons, the concept of forest school is positioned as an instrument of PBE (Boileau & Dabaja, 2020; Cumming & Nash, 2015; Harris, 2017; Harris, 2021; Mikaels, 2019). Engagement with forest ecosystems is a primary way in which students and teachers can return to the intrinsically place-based essence of learning (Seawright, 2014; Smith, 2002; Tuck et al., 2014). There are fundamental differences between forest school and conventional

education, including an emphasis on experiential learning and student-led inquiry (Boileau & Dabaja, 2020; Harris, 2017; Mikaels, 2019).

When forest school is applied through the principles of PBE, a more holistic and multidisciplinary curriculum is often the result (Tuck et al., 2014; Waite & Goodenough, 2018). Forest school teachings must be grounded in current and historical human-nature relations, so as to not create a sense of non-place within the forest (Bertling, 2018; Dickinson, 2011; Gruenewald, 2005). Therefore, forest school should be contextualized and even critiqued in order to become an effective vessel of PBE (Bertling, 2018; McInerney et al., 2011; Miller & Twum, 2017; Seawright, 2014; Tuck et al., 2014; Wooltorton et al., 2020).

2.2.1 Critical Pedagogy

Social, economic, and political systems heavily influence our relationship with the forest (Coughlin & Kirch, 2010; Gruenewald, 2005; Seawright, 2014; Tuck et al., 2014; Wooltorton et al., 2020). Inequity which stems from these systems is often a barrier to fostering a sense of place in the forest (Harris, 2017; McInerney et al., 2011; Miller & Twum, 2017; Yemini et al., 2023). Settler colonialism greatly perpetuates human dominance over nature, as well as dominance over each other, which maintains non-place (Seawright, 2014; Tuck et al., 2014). This is a reality which has profound impacts on both the Canadian and Swedish education systems, which will be discussed in more depth.

As education is often a reflection of societal norms, there are many institutional barriers in implementing critical pedagogy within forest school (Coughlin & Kirch, 2010; Dickinson, 2011). Many existing forest school programs operate outside of traditional school settings, due to the rigorous nature of government mandated curricula, assessment, and safety standards (Gruenewald, 2005; Harris, 2017). This leads to an inaccessibility of forest school, perpetuated by a lack of funding, nature access, and general support within institutions.

Connecting systemic phenomena, such as settler colonialism, to local issues highlights the origins of human-nature separation and lays thegroundwork for students to develop a sense of place (Coughlin & Kirch, 2010; Gruenewald, 2005; Seawright, 2014; Tuck et al., 2014; Wooltorton et al., 2020). It is necessary that youth are provided with tools and opportunities to question the dominant portrayals of human-nature relations (Gruenewald, 2005). Otherwise, there is a risk of perpetuating non-place through oversimplification and homogeneity (Dickison, 2011).

3. Analytical Framework

Based on the theoretical underpinnings, I constructed a comprehensive thematic framework for identifying and examining PBE principles within forest schools (Table 1). This framework is divided into three categories: (1) educational conditions, (2) pedagogical approaches, and (3) student learning outcomes. The educational conditions outlined must be met for key pedagogical approaches to be implemented. Both the educational conditions and pedagogical approaches are required for the student learning outcomes to be realized.

3.1 Educational Conditions

Partnerships with community stakeholders reinforces the impact of forest school, by integrating local and cultural perspectives into learning (Boileau & Dabaja, 2020; Coughlin & Kirch, 2010; Gruenewald, 2005; Semken & Freeman, 2008; Wooltorton et al., 2020; Wright et al., 2021). Partnerships with environmental organizations may also provide students with opportunities to restore habitats and increase ecosystem resilience, allowing students to practice reciprocity (Wooltorton et al., 2020).

It is difficult to blend standardized assessments and settings with PBE, as the learning process and outcomes are fundamentally opposed (Beames & Atencio, 2008; Bertling, 2018; Coughlin & Kirch, 2010; Gruenewald, 2005; Mikaels, 2019; Miller & Twum, 2017; Seawright, 2014; Smith, 2007; Waite & Goodenough, 2018). Rural and urban dichotomies complicate place attachment and may exclude marginalized voices if not addressed (McInerney et al., 2011; Wright et al., 2021; Yemini et al., 2023). There may also be an assumption of a fixed, homogeneous community from which PBE can rely upon (Wright et al., 2021; Yemini et al., 2023). Therefore, permeable educational boundaries, adaptability to local contexts, and teacher training are required for the manifestation of PBE pedagogy, often requiring ample funding and resources.

3.2 Pedagogical Approaches

A key approach of forest school is allowing students to shape their own learning experiences, fostering independence and personal responsibility (Cumming & Nash, 2015; Harris, 2017; Harris, 2021; Waite & Goodenough, 2018). When youth have the ability to set their own goals and explore topics that interest them, they become more invested in their education, leading to higher motivation and engagement (Waite & Goodenough, 2018). Providing students

control over their learning not only increases their connection to place but also encourages them to take initiative in stewardship efforts (Coughlin & Kirch, 2010; Cumming & Nash, 2015; Semken & Freeman, 2008). Additionally, centring local and Indigenous knowledge provides the opportunity for students to engage with Traditional Ecological Knowledge (TEK), deepening their understanding of historical and sustainable land use practices (Seawright, 2014; Tuck et al., 2014; Wooltorton et al., 2020).

As pedagogy grounded in place attachment theory, PBE represents the capacity for student connection to place (Bertling, 2018; Cumming & Nash, 2015; Harris, 2021; Semken & Freeman, 2008; Wright et al., 2021). Therefore, frequent interaction with the natural world is necessary for PBE to thrive (Coughlin & Kirch, 2010; Dickinson, 2011). PBE must circle back to its origins of place, sense of place, and eliminating non-place through:

- Adaptive capacity and growth (Powers, 2004; Smith, 2002; Smith, 2007).
- Local knowledge and perspectives (Semken et al., 2017; Tuck et al., 2014).
- Connection to the global community and awareness of systemic influences (Gruenewald, 2005; McInerney et al., 2011; Yemini et al., 2023).
- Meaningful engagement in real-world problems and skills (Bertling, 2018; Coughlin & Kirch, 2010; Miller & Twum, 2017; Tuck et al., 2014).
- Authentic, student-driven learning (Semken et al., 2017; Smith, 2002; Smith, 2017; Wooltorton et al., 2020; Yemini et al., 2023).
- Practices of stewardship, civic engagement, and community care (Harris, 2021; McInerney et al., 2011; Powers, 2004; Tuck et al., 2014).

3.3 Student Learning Outcomes

To evaluate the impact of forest school, multiple dimensions of learning must be considered. Cognitive growth is demonstrated through students' ability to apply ecological concepts and understand human-nature systems (Semken et al., 2017). Emotional engagement is reflected in how deeply students connect with the forest, often measured through place attachment and appreciation (Cumming & Nash, 2015; Dickinson, 2011; Harris, 2021; Semken & Freeman, 2008). Behavioural outcomes include active participation in projects, advocacy, and personal commitment to sustainable action (Boileau & Dabaja, 2020; Wright et al., 2021). Youth involved in forest school tend to be more curious, creative, and proactive in problem-solving (Knight & Luff, 2014; Mikaels, 2019). Forest school encourages meaningful relationships with local communities, allowing students to learn from diverse cultural perspectives (Coughlin & Kirch, 2010; Gruenewald, 2005; Semken & Freeman, 2008; Wooltorton et al., 2020; Wright et al., 2021).

Table 1. *Thematic framework for evaluating place-based education.*

Principle	Definition	References
	Educational Conditions	
Permeable Educational Boundaries	Curriculum has the capacity to extend beyond the classroom into local environments.	Bartsch, 2014; Gruenewald, 2005; Smith, 2002
Adaptability to Local Contexts	Learning is responsive to global affairs, by contextualizing and addressing them locally.	Ormond, 2014; Smith, 2002; Yemini et al., 2023
Institutional and Administrative Support	Schools receive long-term funding and support for PBE initiatives and programs.	Smith, 2017; Tompkins, 2014; Yemini et al., 2023
Teacher Preparation and Wellbeing	Educators receive professional development and training to effectively implement PBE. Teacher wellbeing is prioritized.	Dubel & Sobel, 2014; Riveiro-Rodríguez et al., 2021
Community Partnerships	Schools collaborate and partner with local knowledge holders to enhance learning.	Barnhardt, 2014; Bartsch, 2014; Semken et al., 2017
	Pedagogical Approaches	
Integration of Local Knowledge	Local culture, history, and ecology are taught, while validating diverse worldviews.	Barnhardt, 2014; McInerney et al., 2011; Ormond, 2014
Community Involvement	Learning involves community contributions, such as volunteerism or service projects.	Bartsch, 2014; Seawright, 2014; Smith, 2002
Teachers as Facilitators and Organizers	Educators facilitate student-led inquiry, and act as community organizers.	Dubel & Sobel, 2014; Ormond, 2014; Smith, 2002
Multidisciplinary and Integrated Curriculum	Learning connects multiple subjects in order to enhance relevancy and holistic understanding.	Gruenewald, 2014; Smith & Sobel, 2010
Culturally Responsive Education	Indigenous and local perspectives are foundational, addressing settler colonialism, systemic issues, and critical pedagogy.	Barnhardt, 2014; Seawright, 2014; Theobald & Siskar, 2014
	Student Learning Outcomes	
Developing a Sense of Place	Students build emotional and intellectual connections to landscapes, cultivating a sense of stewardship and belonging.	Bertling, 2018; Cumming & Nash, 2015; Dickinson, 2011; Harris, 2021
Environmental and Ecological Literacy	Sustainability practices, values, and knowledge are developed and practiced.	Mikaels, 2019; Pyle, 2014; Semken & Freeman, 2008
Civic Engagement and Social Action	Students engage in discourse on policy and society, linking institutions with environmental issues.	Bartsch, 2014; McInerney et al., 2011; Smith & Sobel, 2010; Tuck et al., 2014
Authentic Learning Experiences	Learning typically occurs through hands-on and immersive methods, allowing students to develop skills through real-world experiences.	Dickinson, 2011; Ormond, 2014; Pyle, 2014; Semken et al., 2017
Student-Centered Learning	Students often lead their own learning based on their curiosities and passions.	Smith, 2002; Wright et al., 2021; Zandvliet, 2014a

4. Background

Using the established theory of place-based education (PBE) and forest school, it is crucial to examine how Canadian and Swedish contexts shape the implementation of pedagogy. This section provides knowledge on forestry policy, Indigenous peoples, and educational institutions within each country. While this background is not comprehensive, it consists of foundational themes, historical events, and current issues which are linked to PBE.

4.1 Conditions for Place-Based Education in Sweden

Arguably, there are deep connections between Swedish identity and forests. The concept of *friluftsliv*, or open-air life, is foundational to Swedish cultural ties with nature (Mikaels, 2019). While typically practiced as outdoor leisure and recreation, *friluftsliv* has also been implemented as a place-responsive approach to outdoor education (Remmen & Iversen, 2023). Additionally, the *Allemansrätten* (freedom to roam) acts as a legal framework for public nature access in Sweden, including recreational and educational purposes (Hansen & Sandberg, 2019).

4.1.1 Swedish Forestry Sector

Forests play a significant role in Sweden's land management practices and economy. Approximately 70% of the land area in Sweden is forested (Swedish Forest Agency, 2020). Within the past century, the standing volume of Swedish forests has almost doubled (Swedish Forest Agency, 2020). Moreover, Sweden is still one of the world's largest exporters of forest products, particularly timber and pulp (Swedish Forest Agency, 2020; Swedish Forest Agency, 2023; Hannerz & Ekström, 2023).

Industrial forestry has vastly altered the composition of Swedish forests over time, largely excluding broadleaf species and understory vegetation (Swedish Forest Agency, 2020; Hannerz & Ekström, 2023; Breiting & Wickenberg, 2010). This transformation has had significant ecological consequences, particularly for biodiversity and soil quality (Hannerz & Ekström, 2023; Manni et al., 2013). As a result of commercial forestry, Swedish forests are predominantly composed of Scots pine (*Pinus sylvestris*) and Norway spruce (*Picea abies*), both coniferous species of great commercial value and demand (Hannerz & Ekström, 2023).

While these monocultures have historically been economically beneficial, they are increasingly susceptible to pest outbreaks, storm damage, and soil degradation (Johnson, 2012; Manni et al., 2013; Swedish Forest Agency, 2020). The reduction in broadleaf species has also altered habitat availability for many forest-dependent species, including birds and insects, leading to concerns about long-term ecosystem resilience (Sandell & Öhman, 2010; Swedish Forest Agency, 2020).

The ownership structure of Swedish forests is relatively diverse, where private individuals, often intergenerational enterprises, account for roughly 50% of forest ownership (Swedish Forest Agency, 2023). Private corporations own approximately 25% of the forested land and the remaining 25% is owned by the Swedish state, municipalities, and other organizations (Swedish Forest Agency, 2023). Private ownership has implications for land-use priorities, as profit incentives often drive intensive and production-focused forest management practices (Hannerz & Ekström, 2023; Swedish Forest Agency, 2023).

Climate change poses a significant challenge for Swedish forests, primarily increasing forest vulnerability to disturbance (Breiting & Wickenberg, 2010; Hannerz & Ekström, 2023). Research efforts have focused on diversifying tree species composition and integrating adaptive silvicultural practices to improve forest resilience (Breiting & Wickenberg, 2010; Hannerz & Ekström, 2023; Manni et al., 2013).

4.1.2 Sámi Knowledge, History, and Land Rights

The Sámi people are Europe's solely recognized Indigenous group (Iversen, 2024; Porsanger & Guttorm, 2011). Sápmi, the traditional lands of the Sámi, extends across the Arctic Circle, including regions of Sweden, Norway, Finland, and Russia (Iversen, 2024; Porsanger & Guttorm, 2011). In Sweden, Sápmi begins in the counties of Dalarna and Gävleborg, and continues to the northernmost regions of the country (Melis et al., 2025; Porsanger & Guttorm, 2011). There are several distinct Sámi languages– three of these dialects, North Sámi, Lule Sámi, and South Sámi, are spoken in Sweden (Nutti, 2023; Iversen, 2024; Porsanger & Guttorm, 2011).

Sámi TEK is known as *árbediehtu*, a holistic knowledge system that is passed down through oral transmission, land-based customs, and seasonal migration (Krempig & Enoksen, 2024; Lange et al., 2025; Porsanger & Guttorm, 2011). Within *árbediehtu*, Sámi practice reindeer herding, fishing, and foraging, using sustainable management techniques adapted to boreal and arctic tundra

ecosystems (Krempig & Enoksen, 2024; Lange et al., 2025; Porsanger & Guttorm, 2011). Interconnectedness between and across humans and nature is also fundamental to *árbediehtu*, contrasting mainstream Swedish forestry practices (Krempig & Enoksen, 2024; Lange et al., 2025; Porsanger & Guttorm, 2011).

Industrialization, climate change, and state-imposed colonization efforts have disrupted Sámi cultural practices and traditionally managed ecosystems alike (Keskitalo, 2019; Lange et al., 2025; Melis et al., 2025; Porsanger & Guttorm, 2011). Historical and contemporary colonization efforts in Sweden have marginalized Sámi through forced assimilation, land dispossession, as well as culture and language suppression (Keskitalo & Olsen, 2024; Lange et al., 2025; Porsanger & Guttorm, 2011).

Swedish policies have notably restricted Sámi land rights through legislation like the Reindeer Grazing Act (1886), which defined legal recognition for Sámi people solely through the practice of reindeer herding (Keskitalo & Olsen, 2024; Porsanger & Guttorm, 2011). This law excluded many Sámi from their traditional lands and identities, creating a legal framework that still impacts current disputes over hunting, fishing, and land management rights (Keskitalo & Olsen, 2024; Porsanger & Guttorm, 2011).

Assimilation programs were led by the Swedish government, which implemented a segregation between reindeer-herding Sámi and non-herding Sámi (Keskitalo & Olsen, 2024; Lange et al., 2025; Porsanger & Guttorm, 2011). Boarding and residential 'schools'[2] were established for Sámi children, aiming to limit their integration within Swedish society while suppressing Sámi culture (Keskitalo, 2019; Nutti, 2023; Porsanger & Guttorm, 2011).

While steps toward cultural revitalization, language preservation, and reconciliation of Indigenous rights have been asserted by Sámi leaders, there remains a gap in the accountability and action taken by the Swedish government (Keskitalo & Olsen, 2024; Porsanger & Guttorm, 2011). The establishment of the Swedish Sámi Parliament (*Sametinget*) in 1993 has provided a platform for Sámi self-governance, though it lacks full legislative power (Keskitalo & Olsen, 2024; Porsanger & Guttorm, 2011). Limitations in Sámi representation still exist in the Swedish national curriculum (Nutti & Heatta, 2024; Keskitalo, 2019; Keskitalo &

[2] I use quotations in this context, to recognize that these settings were very different from the schools that non-Indigenous children attended. These institutions, both in Sweden and Canada, were colonially mandated, and subjected children to violence and forced separation from their communities. Cultural and language loss as well as intergenerational trauma persist in the present day because of these policies. Failing to distinguish this colonial legacy from other schools discussed throughout this study would be an inappropriate conflation.

Olsen, 2024; Nutti, 2023; Porsanger & Guttorm, 2011). Although formal Sámi language classes were introduced in 1979, there remains a shortage of fluent Sámi-speaking educators, lack of learning materials, and inconsistent implementation (Keskitalo & Olsen, 2024; Nutti & Heatta, 2024; Porsanger & Guttorm, 2011).

Younger generations are reclaiming their Sámi identity through traditional cultural and language learning as well as activism (Porsanger & Guttorm, 2011). Urban Sámi communities have challenged essentialist and colonial prescriptions of Sámi identity, advocating for inclusive recognition of all Sámi societies and lifestyles (Lange et al., 2025; Porsanger & Guttorm, 2011).

4.1.3 National Education Policy

Sweden's education system is centrally led by *Skolverket*, the National Agency for Education (Breiting & Wickenberg, 2010; Johnson, 2012). Through *Skolverket*, the national curriculum originates from state legislation known as the Education Act or *Skollagen* (Breiting & Wickenberg, 2010; Sandell & Öhman, 2010). Compared to other Nordic nations, Sweden's education system is often considered centralized, although resources and funding are still highly dependent upon individual municipalities (Breiting & Wickenberg, 2010).

Skollagen provides the foundation for what must be taught in schools, however, many independent organizations and private actors may contribute to pedagogy, creating a distinct educational approach (Breiting & Wickenberg, 2010; Harris, 2017; Johnson, 2012; Knight & Luff, 2014; Manni et al., 2013; Sandell & Öhman, 2010). While the centralized curriculum aims to ensure uniformity in educational standards, there still exist disparities and asymmetries across the different regions of Sweden (Breiting & Wickenberg, 2010; Sandell & Öhman, 2010).

A key facet of Swedish education policy is the inclusion of the United Nations' Education for Sustainable Development (ESD) (Breiting & Wickenberg, 2010; Johnson, 2012; Sandell & Öhman, 2010). Sweden is a global leader in ESD, integrating sustainability issues and principles within the curriculum (Breiting & Wickenberg, 2010). Areas for improvement in ESD implementation and environmental awareness include gaps between sustainability rhetoric and its daily practice in schools (Breiting & Wickenberg, 2010; Johnson, 2012; Sandell & Öhman, 2010). Further, the trend of urbanization in Sweden has shown to reduce student's direct engagement with nature, creating barriers for meaningful ESD (Breiting & Wickenberg, 2010; Johnson, 2012; Sandell & Öhman, 2010).

One of the major challenges of Sweden's education system is balancing curriculum demands with unconventional learning approaches, such as forest schools (Harris, 2017; Knight & Luff, 2014). Although forest schools can offer invaluable learning experiences outside of rigorous and standardized curricula, they must ultimately function within the national education framework, creating tensions and drawbacks (Harris, 2017; Knight & Luff, 2014).

Sámi education experiences a similar challenge, particularly in available resources and training for educators (Keskitalo, 2019; Keskitalo & Olsen, 2024; Melis et al., 2025). Many teachers acknowledge their limited understanding of Sámi culture, which often leads to superficial or tokenized representations in the curriculum (Keskitalo, 2019; Keskitalo & Olsen, 2024; Melis et al., 2025). The influence of neoliberalism, which prioritizes economic development over Indigenous ways of life, presents further obstacles to the holistic integration of Sámi knowledge (Keskitalo, 2019; Keskitalo & Olsen, 2024; Melis et al., 2025).

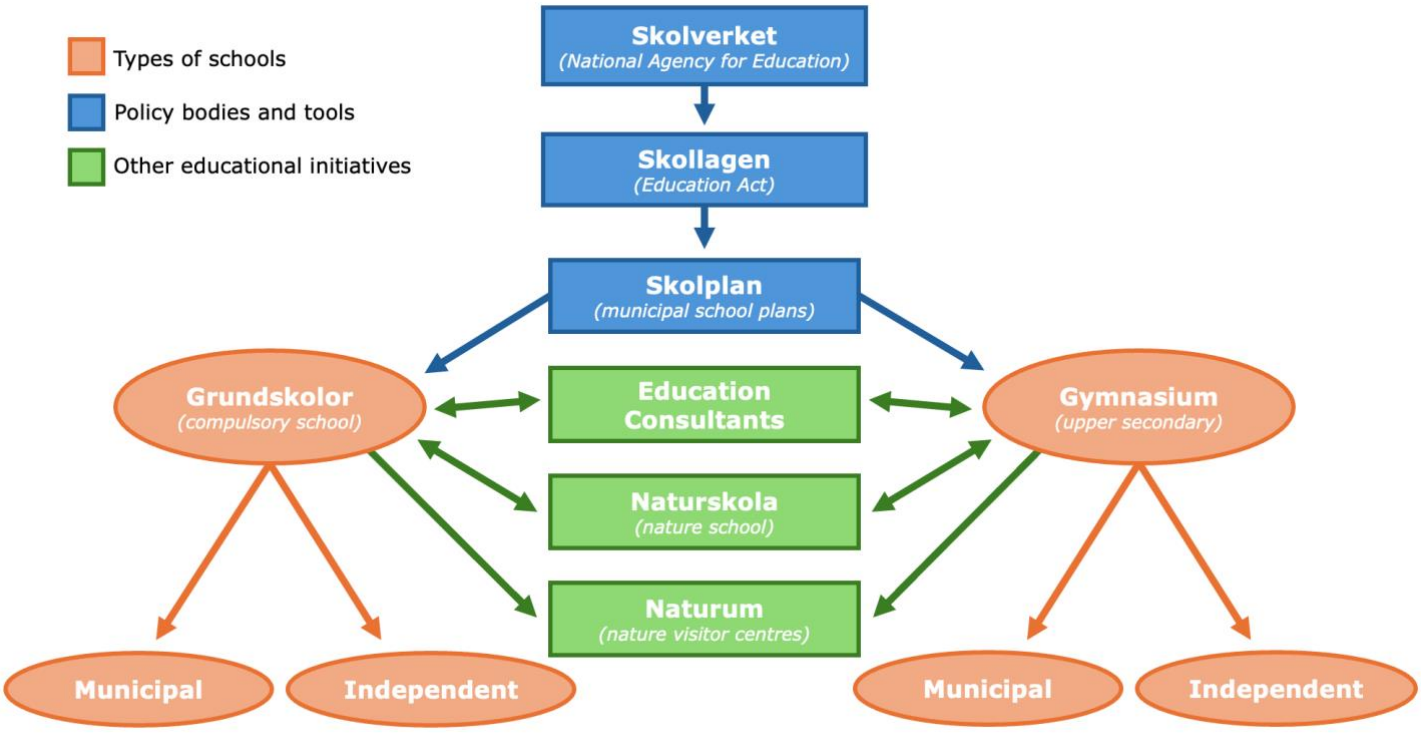

Figure 1. *Key pedagogic stakeholders in Sweden. Connecting lines represent organizational structure. Arrows represent the primary direction of establishing relationship or mandate.*

4.2 Conditions for Place-Based Education in Canada

As a country of diverse Indigenous nations, vast geography, and two national languages, it is both difficult and contentious to assign all Canadians a set of holistic cultural attributes, especially when it comes to identities and relationships with nature. Each of the thirteen provinces and territories across the country are largely autonomous, and are therefore responsible for their own environmental sectors, industries, and educational systems.

4.2.1 Canadian Forestry Sector

The forestry sector has become a cornerstone of the Canadian economy, providing employment and contributing significantly to national exports (Government of Canada, 2017). Approximately 38% of the land area in Canada is forested (Government of Canada, 2025). The industry encompasses three main sectors nationally: 1) solid wood product manufacturing, 2) pulp and paper manufacturing, and 3) forestry and logging (Government of Canada, 2025).

The forested land in Canada has a total cover of nearly 350 million hectares, accounting for 9% of global forests (Government of Canada, 2025). As a result of unique land ownership policies in Canada, 94% of these forests are government owned (Government of Canada, 2017). Most forests are located in the remote, northern regions of the country (Government of Canada, 2025).

Forestry employs over 200 communities across rural Canada, which have become dependent upon this industry for at least half of their base income (Government of Canada, 2017). Indigenous communities are also major forestry stakeholders, since operations necessitate negotiations with Indigenous groups regarding their resource rights, employment opportunities, and environmental stewardship (Bowra et al., 2020; Government of Canada, 2025; Tuck et al., 2014).

While sustainable forest management is a key focus of policy efforts, a reliance on profit has hindered necessary progress for climate change mitigation and biodiversity conservation (Bowra et al., 2020; Tuck et al., 2014; Wooltorton et al., 2020). Canada boasts more than 160 million sustainably certified hectares, representing the largest area of certified forests in the world (Government of Canada, 2017; Government of Canada, 2025). However, research has revealed negligible and even detrimental impacts of these certification bodies (Castka & Leaman, 2016). National and international organizations have platformed concerns over insufficient regulations in the Canadian forestry sector and the prioritization of economic gains over ecological values (Castka & Leaman, 2016).

4.2.2 Indigenous Knowledge, History, and Land Rights

First Nations, Métis, and Inuit peoples are the three legally recognized Indigenous groups under the Canadian Constitution (Government of Canada, 2024). With over 630 communities across Canada, there exists a diversity of Indigenous cultural practices, languages, and relationships with the land– all of which cannot be categorized or described in this section (Government of Canada, 2024). However, stewardship and reciprocity are considered to be two of the overarching tenets for Indigenous land relations, informed by traditional ecological knowledge (TEK) systems which differ across communities (Corntassel & Hardbarger, 2019; Tuck et al., 2014; Wooltorton et al., 2020).

Settler colonization across North America first introduced industrialized resource extraction, going against the principles and practices of Indigenous land stewards (Corntassel & Hardbarger, 2019; Seawright, 2014). The Canadian government initially worked to undermine Indigenous sovereignty through land treaties, many of which were signed under coercion or misunderstanding (Bowra et al., 2020; Corntassel & Hardbarger, 2019; Seawright, 2014; Tuck et al., 2014). The Indian Act (1876) further entrenched colonial control, by regulating Indigenous identity and governance (Corntassel & Hardbarger, 2019; Tuck et al., 2014). The establishment of reservations confined Indigenous peoples to specific plots of land, leading to economic marginalization (Corntassel & Hardbarger, 2019; Government of Canada, 2024). The Indian Act continues to be the sole body of legislation from which Indigenous peoples are recognized and receive rights under the Canadian Constitution (Government of Canada, 2024).

Education has been used as a primary tool of colonization, as seen in the residential ‘school’ system, which aimed to eradicate Indigenous languages and cultures (Corntassel & Hardbarger, 2019; McKim et al., 2019; Pugh et al., 2019; Seawright, 2014; Tuck et al., 2014). The intergenerational violence enacted by this system is still felt today, as Indigenous knowledge continues to be marginalized within mainstream education (Corntassel & Hardbarger, 2019; McKim et al., 2019; Pugh et al., 2019). Land-based learning and Indigenous-led education initiatives therefore seek to reclaim traditional knowledge systems within conventional education (McKim et al., 2019; Pugh et al., 2019).

While government efforts like the Truth and Reconciliation Commission of Canada (TRC) aim to repair many of the current issues faced by Indigenous peoples, the dominance of colonial structures continues to obstruct a thorough and complete reconciliation process (Bowra et al., 2020; Tuck et al., 2014). Contemporary challenges, such as restricted access to land for economic

development, underrepresentation in decision-making, and continued exploitation of resources without adequate consultation, all stem from these historical and ongoing injustices (Bowra et al., 2020; Corntassel & Hardbarger, 2019; McKim et al., 2019; Pugh et al., 2019; Tuck et al., 2014; Wooltorton et al., 2020).

Many Indigenous communities are actively involved in land management, conservation, and economic development activities that align with their cultural values (Bowra et al., 2020; Corntassel & Hardbarger, 2019; Seawright, 2014; Tuck et al., 2014). Indigenous-led forestry operations are also growing, with many groups participating in sustainable harvesting and restoration projects (Corntassel & Hardbarger, 2019; Seawright, 2014; Tuck et al., 2014). For example, in 2019 the province of British Columbia implemented the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) in provincial legal frameworks, for the purpose of sharing land management and decision-making with First Nations (Province of British Columbia, 2024).

4.2.3 Decentralized Education System

The Canadian education system is distinctly decentralized, with each of the country's 13 provinces and territories responsible for developing their own curriculum (Ardoin, 2006; Asfeldt et al., 2022; Boileau & Dabaja, 2020; Dann & Schroeder, 2015; Mathias et al., 2020; Zandvliet, 2014b). Unlike Sweden's national curriculum, the Canadian approach allows for significant regional variation in learning goals and outcomes, enabling each province and territory to accommodate local needs and contexts (Breiting & Wickenberg, 2010; Zandvliet, 2014b). While decentralization provides this kind of flexibility, it also presents challenges for consistent implementation (Breiting & Wickenberg, 2010).

Thirteen years ago, the former Ministry of the Environment created a document entitled: *A Framework for Environmental Learning and Sustainability in Canada* (Government of Canada, 2002). Since the release of this initial framework, the federal government has conducted national public consultation and research towards the creation of an updated *National Framework for Environmental Learning* (Government of Canada, 2025). The Council of Ministers of Education, Canada (CMEC) is another initiative which convenes provincial and territorial leadership (Karrow & DiGiuseppe, 2019). Based on several studies conducted across Canada, CMEC has established the United Nations' Education on Sustainable Development (ESD) as a pertinent pedagogical framework and has encouraged widespread ESD implementation (Karrow & DiGiuseppe, 2019). However, none of these federal frameworks are made mandatory for provincial and territorial adoption.

Differences in curricula mean that environmental education and Indigenous perspectives may be prioritized differently across jurisdictions (Ardoin, 2006; Asfeldt et al., 2022; Bowra et al., 2020; Dann & Schroeder, 2015; Tuck et al., 2014; Zandvliet, 2014b). Disparities in program availability and resource accessibility can impact students' exposure to critical topics, such as climate change and sustainability (Asfeldt et al., 2022; Boileau & Dabaja, 2020; Bowra et al., 2020; Karrow & DiGiuseppe, 2019). Partnerships with independent organizations can help provide more learning opportunities for students. Funding for these partnerships often depends on local budgets and competitive grants, leading to further inconsistencies in program implementation (Bowra et al., 2020; Tuck et al., 2014; Zandvliet, 2014b).

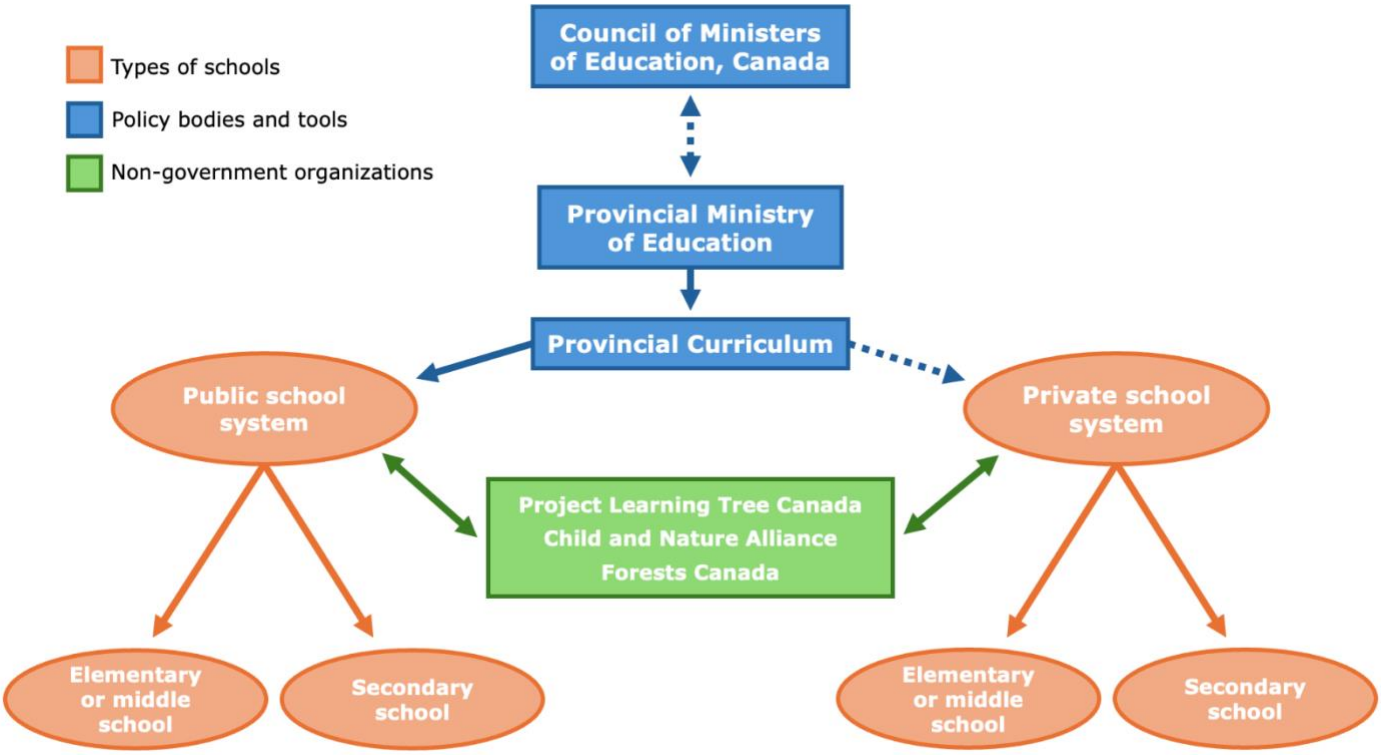

Figure 2. *Key pedagogic stakeholders in Canada. Connecting lines represent organizational structure while dotted lines represent voluntary curriculum adherence. Arrows represent the establishment of relationship or mandate.*

5. Methods

This study employs an ethnographic, comparative case study approach, to examine how PBE principles are implemented in Swedish and Canadian forest school programs for youth ages 13–16. I aim to more deeply understand how PBE is developed and applied within forest school contexts. The selected methodology is consistent with research focused on analyzing text (Hagaman & Wutich, 2016).

Additionally, comparative case study is a common and useful research method in the social sciences, often leading to a greater depth in results (Flyvbjerg, 2006). For this study, interview transcripts and pedagogical documents served as the primary data collected. Thematic coding and triangulation were utilized as analysis methods for effective case comparison.

5.1 Case Selection Criteria

Forest school is defined as educational programming whereby students learn within a forest ecosystem, including trees, understory plants, and wildlife. Across different political, economic, and cultural contexts, the definition of 'forest' is quite variable.

This study employed a broad definition of ‘forest’ in order to include diverse perspectives of urban, peri-urban, and rural forest school programs. Some examples of ‘forest’ spaces considered in this study are:

- Woodlands, whether protected or commercial.
- School yard trees and nature.
- Urban forests, including parks and green spaces.
- Riparian ecosystems and forested wetlands.

The study focused on secondary forest schools for youth ages 13–16 in both Sweden and Canada. Selection of these two countries and the target age group was based on the following criteria:

- Cultural values, including Indigenous cultures, aligned with forest school as well as access to forest ecosystems.
- Accessibility for data collection and knowledge acquisition, given proximity of both countries to the researcher.
- Representation of diverse regional and ecological contexts.
- Opportunity for research on an underrepresented demographic within the realm of forest schools and PBE.

Stakeholders were identified through literature review (Table A1) and recommendations, ensuring a broad representation of forest school models for the target age group. Stakeholder selection was based on the following criteria:

- Pedagogy which includes, either wholly or partially, forest school programming.
- Accessibility for data collection, including willingness to participate in an interview.
- Representation of diverse regional, ecological, and cultural contexts.

5.2 Data Collection

Data was derived from two sources: (1) interview transcripts and (2) pedagogical documents. Details for each of these sources are outlined below.

5.2.1 Semi-Structured Interviews

Interviews were conducted with key forest school stakeholders, including educators, program leaders, and one former student. A total of 19 individual interviews and 1 focus group interview, consisting of 12 Swedish stakeholders and 10 Canadian stakeholders, were conducted (Table 2). This sample size is consistent with research on the requirements for qualitative data saturation, in which 20–40 interviewees on average are needed (Hagaman & Wutich, 2016).

Of the 12 Swedish respondents, 9 consisted of educators from the *Naturskoleföreningen* (Nature School Association). The remaining interviewees represented one NGO consultant, one *naturum* (visitor centres in nature) educator, and one former gymnasium school student. From the 10 Canadian respondents, 6 were provincial educators and 1 was a Canadian Administrator. The remaining respondents represent three Canadian NGOs. Interviews were recorded and conducted virtually for an average length of 45 minutes. Transcripts were generated automatically from the recordings, using Zoom's closed captioning function.

Participants were initially sourced from online sources (Table A2) followed by a snowball sampling approach, ensuring a diverse range of perspectives. A framework and list of guiding interview questions (Table B1) was created based on a forest school and PBE literature review (Table A1). The purpose of the interview framework was to gather insights into the required conditions for successful programming, if and how interviewees apply PBE principles, and the outcomes observed in student learning. Interview data saturation was reached when no new significant themes emerged.

Table 2. *List of interview participants, including region and affilitation. The names used to identify respondents are also used to credit direct quotations in the Results section.*

Name	Province/Territory/County	Affilitation
Canadian Administrator	British Columbia	Pacific Rim School District
Canadian NGO 1	Newfoundland and Labrador	Child & Nature Alliance
Canadian NGO 2	Ontario	Forests Canada
Canadian NGO 3	Ontario	Project Learning Tree
Canadian Educator 1	British Columbia	Powell River School District
Canadian Educator 2	British Columbia	Powell River School District
Canadian Educator 3	British Columbia	Wildsight Society
Canadian Educator 4	British Columbia	Powell River School District
Canadian Educator 5	British Columbia	Abbotsford School District
Canadian Educator 6	British Columbia	Powell River School District
Swedish Educator 1	Dalarna	Naturum Fulufjället
Swedish Educator 2	Uppsala	Naturskoleföreningen
Swedish Educator 3	Uppsala	Naturskoleföreningen
Swedish Educator 4	Stockholm	Naturskoleföreningen
Swedish Educator 5	Dalarna	Naturskoleföreningen
Swedish Educator 6	Uppsala	Naturskoleföreningen
Swedish Educator 7	Uppsala	Naturskoleföreningen
Swedish Educator 8	Västmanland	Naturskoleföreningen
Swedish Educator 9	Stockholm	Naturskoleföreningen
Swedish Educator 10	Uppsala	Naturskoleföreningen
Swedish Education Consultant	Norrbotten	Anonymous NGO
Swedish Former Student	Örebro	Kvinnerstagymnasiet

5.2.2 Pedagogical Documents

A comprehensive analysis of pedagogical documentation was conducted to assess forest school programming. In total, 261 pages of Swedish pedagogical documentation as well as 239 pages of Canadian pedagogical documentation were collected, with guidance from interview respondents and to corroborate oral testimonies. Documentation included curriculum handbooks (417 pages), lesson plans (23 pages), and educational policies (60 pages) which provided further context or information for the interviews. Some documentation was sourced from public online databases (Table A2) prior to or after the interviews took place, while most documents were provided in digital copies directly from respondents. To maintain respondent confidentiality, identifying information for privately-owned data have been excluded from this study. Data saturation for pedagogical documentation was reached when no new significant themes emerged.

5.3 Data Analysis

A qualitative thematic analysis approach was employed, using both deductive and inductive coding to interpret the data from interviews and documentation. Deductive codes were developed using the forest school and PBE literature review (Table A1) conducted during data collection. Inductive codes emerged organically from respondent narratives and documentation. Once interviews were transcribed and documents were collected, the deductive coding framework was applied. Themes generated inductively from the data were then added to this framework throughout the analysis. Data was triangulated between documents and interviews, to ensure credibility and depth in findings (Jerolmack & Khan, 2014). Member checking was conducted, which involved collecting direct quotations from interview transcripts and sharing these findings with individual interview respondents. This process helped to verify information cited in interviews, ensure that individuals and organizations are accuracy represented, and to acquire additional context for responses if needed. The final coding framework was used to conduct a comparative analysis of Swedish and Canadian forest schools. Best practices and challenges in implementing PBE were identified, both in terms of regional consistencies and differences. Contextual factors influencing the results were also examined.

5.4 Ethical Research Conduct

Informed consent was obtained from all stakeholders prior to their participation in an interview. Data processing and protection was conducted in accordance with the General Data Protection Regulation (GDPR) as well as the Swedish Authority for Privacy Protection. Subsequently, names and identifying details of interview participants have been anonymized in the research results. Research methods were constructed and adapted to uphold Indigenous knowledge systems, through guidance from Indigenous stakeholders on decolonial and reciprocal research methods throughout the data collection and analysis stages. Only adult stakeholders were asked to participate in the study, as ethical, logistical, and funding constraints limited the inclusion of youth participants directly.

6. Results

6.1 Permeable Educational Boundaries

All of the Swedish and Canadian forest school documentation noted the necessity of frequent and reliable access to forest spaces for pedagogy. Within the Swedish *naturskola* programs, learning is often based upon natural environments themselves, including parks and adjacent woodlands, whether publicly or privately owned. The presence of *naturum* within national parks and nature reserves provides youth with tangible examples of biodiversity conservation, old growth forests, and human-nature relationships. Canadian NGOs focus on empowering teachers and administrators to access forest spaces within traditional education, by providing resources on how to connect forest education with provincially mandated curricula.

5 out of 10 Canadian interviewees and 7 out of 12 Swedish interviewees expressed challenges in conducting educational programming within the forest, as well as balancing sufficient time spent in the forest with time spent in traditional classrooms. 3 out of 10 Canadian interviewees and 7 out of 12 Swedish interviewees expressed conflicts between standardized curricula and forest schooling, posing a challenge to overall time spent in the forest. Respondents in both Canadian and Swedish contexts reported frequency of youth forest visits and the amount of time youth spend in the forest as highly dependent upon the proximity of schools to a forest area. Educators cited the importance of having regular and consistent access to the forest as part of their programming. Forest school programs located in nature reserves, national parks, or private forests described challenges in having schools provide transportation to these sites.

One *naturskola* program aims to address this challenge by providing a unique transportation opportunity for urban youth to experience nearby forest and nature reserves. Students and teachers are picked up from their school grounds by a bus, which includes educational programming during transport to the forest. This opportunity is free for youth who attend school within the municipality:

> “The bus is very facilitative, especially when it comes to taking the classes that are located in the north of the municipality. It's a fairly immigrant-heavy area, with a lot of students living basically in the concrete bush. They are as far away from greenery as possible, and that means very few of them have had the opportunity to visit a true nature reserve. The bus simplifies this and facilitates that we can pick them up at school and bring them back to school. It's easier for

the teachers, it's easier for the students, and it's easier for us because we can always visit all the same places." - Swedish Educator 10 (5/3/2025)

Canadian educators noted if their school was located near a public forest, which if so, allows for frequent programming in the forest. Forest school curricula developed by Canadian NGOs specifically mentions school proximity to public parks, forests, and woodlands, while providing guidance to teachers on how to facilitate their programming in these forest spaces.

6.2 Adaptability to Local Contexts

NGO and *naturskola* documentation both outline activities based on localized conditions. *Naturskola* programs are explicitly place-based, with the goal of integrating local environments into youth education. Swedish educators are encouraged to adapt activities to their local context and conditions. Both Canadian NGOs and provincial schools emphasize experiential, hands-on learning in the forest. Especially for NGOs, curricula are explicitly flexible in integrating local knowledge as well as adapting to regional conditions and mandates.

7 out of 10 Canadian interviewees and 10 out of 12 Swedish interviewees commented on adapting forest school pedagogy to students located in urban versus rural settings. Specifically, respondents noted that urban youth typically have less pre-existing knowledge about the forest than youth from rural or countryside schools. 100% of Canadian interviewees and 7 of the 12 Swedish interviewees commented on adaptability to local contexts, environments, and needs as being a key facet of their forest school pedagogy.

Swedish educators commented on ways in which pedagogy is modified to accommodate different urban and rural settings, as well as youth's comfort levels and knowledge bases related to their primary environment:

"We notice the difference between students who are from the countryside schools, they are more used to being outside. They are more likely to know what a roe deer or a wild boar is, but you rarely hear that from those in the city schools. Their ecological knowledge is lacking a lot, so we work a lot with laminated pictures outside. Let's say we pass through where the wild boars have been, maybe for half of them they don't know a wild boar is, so you have a picture. That's a very important component for us to work with pictures." - Swedish Educator 8 (3/3/2025)

"We have so many different kinds of societies here. Big cities, small cities, and villages. You have to adapt to the group you're meeting with." - Swedish Education Consultant (3/3/2025)

> "I usually ask the teachers: 'What are you studying? What is the purpose of your visit here?' Because some schools come up with all of their seventh graders, so they're like 200 pupils. Then we always try to divide them into groups and we really try to focus on what they need. I always ask: 'What can we do? How can we make the most out of this?'" - Swedish Educator 1 (13/3/2025)

Canadian NGOs commented on striking a balance between national programming while maintaining regional adaptability, in order for the curricula to be relevant to teachers and administrators across different educational mandates:

> "We're not in every single school by any means, we're not even in every single province at this point. One of the big things that we're asking from teachers is to give us feedback, so we are constantly looking for that input. Anytime teachers are doing an activity with their class, if something just doesn't fit right or they did something different and it was way better, we want that feedback." - Canadian NGO 3 (3/3/2025)

> "We make sure that we're regionally relevant. We have a national curriculum that provides some continuity and Two-Eyed Seeing across Canada, but all of that is adapted based on the region and the land that the practitioners course is taking place in. Still, we offer continuity and certification, so everybody completes the same coursework." - Canadian NGO 1 (19/3/2025)

6.3 Administrative and Institutional Support

8 of the 10 Canadian respondents and 11 of the 12 Swedish respondents expressed a lack of funding and resources as being a significant barrier to their programming. Effective delivery of the curriculum requires institutional support for outdoor education, as it depends on providing appropriate outdoor settings and regular access to forest spaces. Administrative personnel need to ensure that there is time allocated within the school day for outdoor activities, while providing necessary materials and equipment for both students and teachers.

Both *naturskola* and Swedish NGO documentation stress the importance of creating environments which integrate theory and practice, requiring specific institutional conditions. The Swedish NGO interviewed is funded and resourced by private companies, often in the forestry industry, rather than through municipal or national funding. *Naturskola* programs experience key challenges related to their reliance on municipal funding.

> "Our program receives funding from the municipality itself, from our taxpayer money. Our budget for last year covered two full time employees, diesel, and

everything that is connected to all the material. In retrospect, it's not the biggest expense that this municipality has. With the entire budget of the municipality, this program represents 0.0005%, because it is not a legally mandated program. The setbacks throughout the years have mainly been due to changes in political mandate or ideological changes, where once a new party comes to power they strip the budget of everything. Having these programs is a bit of a luxury in certain parts of Sweden, especially the parts that are more sparsely populated and have a lot of budget problems in general." - Swedish Educator 10 (5/3/2025)

"What costs for the school is the transportation, because there is no public transport here. They have to hire a bus company to leave them and pick them up again, that's the cost for the school. Otherwise it's funded by the municipality. What we noticed is that because it costs to hire the bus, the schools want to bring as many children as possible in one bus or two buses. That can often lead to more quantity than quality, so we are now actively trying to work on having smaller groups. It's easier to reach out and to do what you want to do in the field with a smaller group, because with a bigger group it's more difficult to really focus on the experience." - Swedish Educator 8 (3/3/2025)

"The municipality just took away funding, so my colleague works 40% less than before. It's because there are not so many children here anymore. People don't have so many children anymore. Also because of an independent school that just opened and has taken lots of pupils from the municipality schools." - Swedish Educator 9 (17/3/2025)

"It's always the money that's tough for us. The schools do not have much money so we always have to adjust, and it's a fine balance. If we want to 'sell' this experience, we can't really be expensive. We want to share as much as we can, and we would like this to be a resource for our municipality. But the municipality has decided just to pay for 100 school visits, and that's just for the fifth graders in the spring and the third graders in the autumn." - Swedish Educator 4 (12/3/2025)

Similar challenges exist for *naturum,* which is dependent upon both municipal and national funding, where the budget for employee salaries and operational costs fluctuates from year-to-year.

"The government cut the funding for nature conservation in Sweden, so there's a lot less money now. I used to work 100% and I also had a colleague who was 50%. I don't have that colleague anymore and I only work 70%. If I'm the only one and there's a lot of people coming, I just hand out maps and try to help everyone. One of the things that the Swedish Environmental Protection Agency emphasizes is that I should meet with schools, but it's really hard if you need to keep the visitor center open and you cannot take in extra staff. It's really hard

because you feel like you're failing in every area." - Swedish Educator 1 (13/3/2025)

Within the provincially mandated curricula in Canada, teachers and administrators must facilitate forest school programs through the curricular goals. Oftentimes, forest school can only be facilitated based on fundraising and persistent administrative support for such programs. Some regional districts have access to more funding and resources than others.

"We have a very highly resourced program right now to get it off the ground. We have the educator capacity to engage and create this type of educational opportunity. Then of course we look at the safety, liability, and hard skills to do the kind of things that our communities and our students are asking us to do. We developed an in-house training program with the Outdoor Council of Canada and we did a large call for educators who were interested. We also did some wilderness first-aid training. We did quite a bit of professional development work with our educators on skill-centered action-based learning. It's developing the capacity of the adults in the room to be comfortable with the basics of all those actions that we are doing. Educator passion is really important. We can all get some basic skills, but then it's really up to the educator to manage the rest." - Canadian Administrator (28/2/2025)

"The district level administration can make it more difficult. Just to take the students on a simple walk outside, there's a level of provincial bureaucracy that makes it more and more difficult. Administration really doesn't want students leaving the classroom, even though we walk about a block to the forest, we look around, and we walk back." - Canadian Educator 5 (3/3/2025)

"We have an administration that is good and tries, but is not necessarily forward thinking in terms of providing opportunities. We have district wide policies regarding sustainability and outdoor education, but I would suggest that our administration does not see that as a priority. Myself and a couple of teachers have been really pushing to develop a space on the high school property that we call the 'living lab.' We fundraised ourselves for a lot of it, and it's been a little bit of a struggle to keep it going. We get a bit of push back from the district saying it's more maintenance, so the cost is the bottom line rather than this opportunity for education. It's just a few steps outside and the students can have access to Indigenous plants, see how forests grow, and start understanding forest dynamics." - Canadian Educator 6 (27/2/2025)

"A lot of funding comes from our Parental Advisory Committee. In the past they only wanted to fund physical items that are going to be used over and over. They didn't want to put money towards experiences. But there is a climate shift in our

district policies and our district goals, they're more based on sustainable education now, and that has opened doors." - Canadian Educator 1 (27/2/2025)

"In terms of funding, a lot of it does not come from the schools. The board of education, they do not pay for any of this." - Canadian Educator 3 (5/3/2025)

Canadian NGOs rely upon government grants, fundraising, and private sector partnerships to develop forest school curriculum for provincial school systems and teachers.

"How we can do more programming with limited budgets, large geographic area, and conflicting requirements is an interesting challenge. Do we partner more? Do we increase costs? Is it more fundraising?" - Canadian NGO 2 (20/3/2025)

"Nationally in Canada we are not as advanced as we could be, and we are not supporting as much nature-based and environmental-based education as we can be." - Canadian NGO 3 (3/3/2025)

6.4 Teacher Preparation and Wellbeing

7 out of 10 Canadian respondents and 10 out of 12 Swedish respondents expressed concern over a lack of teacher training, knowledge, and experience within forest school practice and pedagogy.

Naturskola programs often provide training to teachers from municipal schools, with the aim of equipping all teachers with the necessary skills and knowledge to utilize forest spaces effectively to achieve learning goals outlined in the national curriculum across different subjects. Training intends to make teachers comfortable and competent in integrating outdoor education within their regular teaching practice.

Naturskola educators themselves typically possess backgrounds not only in teaching but also in forestry, biology, or natural sciences, providing a specialized approach to forest school programming. Teacher preparedness beyond this knowledge background includes multidisciplinary competencies beyond traditional teaching methods. *Naturskola* curriculum provides comprehensive resources, lesson plans, and background information for municipal schools, reducing the burden on teachers regarding content preparation. Challenges in teacher preparation and knowledge still persist.

> “We're writing this digital handbook for the teachers and a strategic digital manual for the principals and the municipalities too, for emphasizing the connection to the curriculum and that what we do is research based, the manual is meant as a help for taking responsible and sustainable decisions” - Swedish Educator 5 (11/3/2025)

> “We meet with teachers and see how we can work together to find ways to use their nearby forests or parks where they can do education that's connected to what they’re supposed to be doing according to the curriculum. What we notice is that some high school teachers might have the experience or they might already do things outdoors. Especially if you're a teacher in biology or natural sciences you're supposed to do field studies, but usually it's like a recipe-based thing. All the other teachers, they would never go outside unless it's to visit a museum or something like that. But I think we're trying to emphasize that you can have education outdoors and it doesn't have to be just about nature and biology. You can teach about anything really, but we can tell that most people don't initially see those possibilities.” - Swedish Educator 3 (18/3/2025)

> “Sometimes the teachers don't live in the same municipality where they teach, they are traveling here and they don't know anything about the forests near their classrooms.” - Swedish Educator 7 (19/3/2025)

> “We always have the ambition that the teachers will take out their students by themselves during their own school time, on the schoolyard or nearby in a forest. We have written a lot of books to show them how to do it, but it's hard for them to come out because the teachers have too much to do. We have just now prepared backpacks for all schools in the municipality. We have made these bags with different equipment so teachers can go out, and we have written down what they can do with it. We want them to be outdoors more than once a year.” - Swedish Educator 9 (17/3/2025)

> “It's hard to find really good, experienced staff that are flexible and are fit for being outside and taking responsibility.” - Swedish Educator 4 (12/3/2025)

> “All the classes are growing so much. Some days we have lots of students, and we say that we want to keep the groups small because of nature awareness and contact with nature. We want to keep everything small but the teachers want to make it a big day, because they want to have three classes outside all on the same day.” - Swedish Educator 6 (19/3/2025)

Throughout provincial school systems in Canada, teacher knowledge, preparedness, and skills to facilitate forest school programming are also deficient. Initiatives by the teachers themselves and school administrators exist within certain Canadian school systems to enhance

teacher training and professional development. Positive examples of teacher involvement in forest education is relayed by school educators. However, barriers to widespread implementation still exist.

> "If you're a new teacher, if you don't have the experience, you're more likely to just stick to what the curriculum says, not divert. I think if you want to get teachers involved in forest education, they need to be provided with resources." - Canadian Educator 5 (3/3/2025)

> "I think it's very difficult for teachers to get out on the land. I'd say that until it becomes something that is specifically in the curriculum, there are a lot of teachers who will find reasons not to do it. Our school is lucky. We have a lot of teachers who are happy to get the students out on the land. I know of one teacher who gets the students out to the exact same spot. The students have to choose a spot in the forest. They go back to it every month or so, and they have to sit in that space, observe any changes, listen, and really immerse themselves. There are at least three teachers that I know of who do that. There are a number of teachers who, as soon as I suggest that I could do a plant walk with them in the spring, they take that up." - Canadian Educator 6 (27/2/2025)

> "What's a barrier for a lot of teachers is that they're afraid to take students outside because of the risk. I think starting really small with your practice and getting comfortable and getting as much information about how to make that experience really engaging and meaningful. Where I'm at in my life now is all about mentorship and really helping to equip teachers with everything I have, like all the activities, all the resources, all the little tips and tricks so they can do all of this on their own." - Canadian Educator 3 (5/3/2025)

Additionally, 7 out of 10 Canadian interviewees and 5 out of 12 Swedish interviewees commented on teacher overwhelm and overburden as being a noticeable challenge or barrier to forest school programming. This burden on teachers contributes to a lack of knowledge, training, and skills to advocate for and facilitate youth forest education.

> "Provincially and territorially mandated curricula are so jam packed, it is overwhelming. Teachers are overworked, their schools are understaffed and under-resourced. We're really just trying to show the importance of forest education and show that it isn't additional work for them." - Canadian NGO 3 (3/3/2025)

> "Teachers right now are burned out. They're exhausted and they don't have a lot of time or energy to create their own resources. In order for teachers to be involved, especially new teachers, they need resources. They're just trying to survive and get through." - Canadian Educator 5 (3/3/2025)

> “The problem is that teachers don't really know what to do outside because they are so stressed. The students need their grades and everything should be connected to the curriculum. We try to show the teachers that they can reach the goals in the outdoor classroom. Once you've started, it's like with everything, you need to get into a routine. It's the same with the students, once they get used to it they know what is expected from them and most of them enjoy the variety of learning in different environments.” - Swedish Educator 5 (11/3/2025)

> “I wish more teachers were educated on how to apply for grants because it's not always clear, especially for new teachers. They're just struggling to survive in the classroom.” - Canadian Educator 1 (27/2/2025)

> “We are talking a lot in Sweden right now about teacher’s time and if there should be some new regulations. Perhaps that will influence the teachers’ time, and if the teachers have more time to make preparations it will be a lot easier for them. It will also be easier for us to do these preparations together with the teachers.” - Swedish Educator 7 (19/3/2025)

> “You don't want to add to teachers’ plates. They're already working really hard. Perhaps not having a really top-down and rigorous curriculum, but one that teachers could see would fit in easily, where they don't have to do any extra work.” - Canadian Educator 4 (11/3/2025)

Canadian NGO 1 is the sole provider of national forest school practitioner certification in the country. Their aim is to provide this certification to educators and administrators across different provincial mandates and regions, in order to facilitate widespread forest school programming for youth.

> “We have four designations of forest and nature school practitioner courses. First, we have an independent designation, which means that they are interested in starting a new program from the ground up. It's our largest, most comprehensive offering. The second one, we call it a lead regulated designation, is designed for teachers. Usually institutional, traditional education stream teachers are looking to make waves in their school and bring this type of programming to their school. That coursework has been adapted to support them in proposing policy changes and working with their administration. Our third one is what we call the support designation. This one came later in response to some professionals who are working in established forest and nature school programs and wanted to be certified. The fourth one is brand new that we have been piloting for administrators and leadership in the traditional educational settings who are interested in making change. This designation assumes that they have influence and power over how programming is delivered in their

school, so the coursework package supports them in setting up a program for their teachers.” - Canadian NGO 1 (19/3/2025)

5 of the 10 Canadian interviewees and 5 of the 12 Swedish interviewees highlighted educator satisfaction and enjoyment within their forest school programming. Teachers in both contexts experience a sense of purpose when developing and facilitating youth forest education.

> “It is a privilege to be together with the students when they are journeying from very scared to absolutely comfortable in the forest. They are also very fascinated about how many different things they are able to learn outdoors. And we have fun all the time. It's great, we have very, very exciting work.” - Swedish Educator 6 (19/3/2025)

> “I do put a lot of time into this, but the trade off is that I enjoy teaching so much better when we do this. It's just amazing. I learn just as much as the students when we go outside and do this stuff. It makes my job better, but I also know it's going to make their lives better.” - Canadian Educator 1 (27/2/2025)

6.5 Community Partnerships

100% of Canadian respondents and 11 of the 12 Swedish respondents noted having a positive relationship with one or more key community partners within their forest schooling. On the other hand, 3 out of 10 Canadian interviewees and 10 out of 12 Swedish interviewees noted having insufficient or no relationships with one or more key community partners in their programming.

> “Fortunately, this program is very well known among many long sitting politicians and almost all citizens that have grown up in the municipality. Even I participated in it when I was a student. So it's easy to get the public to be a bit rowdy in funding situations. And that is what has saved the program throughout the years so far. Right now we're on stable feet for the time being.” - Swedish Educator 10 (5/3/2025)

> “There are teachers that will invite local people who are experts in natural plants and fungi at different times of the year to go foraging. So I think having access to people in the community who are experts is important. I don't think the partnership between us and the Indigenous nation here is token. It can always be better, but it's pretty powerful here.” - Canadian Educator 4 (11/3/2025)

> “I've been here about 15 years now and when I first came I saw an unfortunate divide between the city and the Indigenous community. But it has vastly improved. They were able to sign their own treaty not too long ago. There have

been tremendous efforts to focus on reconciliation and I have seen a really beautiful increase in the relationship." - Canadian Educator 6 (27/2/2025)

"There is no conflict between my organization and the schools in my region. In fact, we are often welcomed and appreciated, because we connect theory with practice. Only one of fifteen communities in my region has rejected our offers for outdoor activities, and this is a Sámi community." - Swedish Education Consultant (3/3/2025)

"What we've learned is that the quality of our relationships really matters. As an organization we grew really fast. For example, last year we offered upwards of 30 courses all across Canada. These are 30 very unique regions of Canada, with very unique Indigenous nations, some of which we had our facilitation team build outstanding relationships with, so that was a great foundation to build on. What we found is that as time goes on and the more the relationship strengthens, the Elders and knowledge sharers get more comfortable in weaving their traditional knowledge throughout our curriculum." - Canadian NGO 1 (19/3/2025)

Provincial curricula and Canadian NGO programming recommend consistent interactions with community professionals, knowledge keepers, and experts in various forest-related fields. Documentation invites educators to include community experts, such as Indigenous knowledge keepers, through specific activities that have embedded Indigenous perspectives and language learning opportunities. Some provincial mandates outline that teachers are expected to integrate Indigenous partnerships into teaching practices.

6.6 Integration of Local Knowledge

All Canadian respondents and half of Swedish respondents reported incorporating localized knowledge within forest school pedagogy. Similarly, 7 of the 10 Canadian interviewees and 4 of the 12 Swedish interviewees noted the use of local forests for making theoretical learning more relevant to youth learning.

Naturum specifically utilizes access to old-growth forests as an entry point into conversations with youth around biodiversity decline and the importance of diverse and resilient ecosystems. Local, experiential examples of ecology, history, and culture are used to make topics such as climate change, forest management, and stewardship more relevant to student learning.

"I always tell the students that this forest is where the fairytale creatures are said to live. You have this Swedish female being, which is called *Skogsrå*, and she is the guardian of the forest. If you do the forest harm, she is not nice. We usually

have *fika*, and if there is any warm water left in the thermos when we're done, I pour it out so I don't have to carry a lot of weight back with me. But I always say to the students that if they are going to throw the rest of their tea or something out, they have to give a warning to the forest." - Swedish Educator 1 (13/3/2025)

"We have a bird, the Siberian jay, who is our national park symbol. They live as a family, so they're a very social bird. They're also very smart, they have a good memory, and they come to sit in your hand. It really touches you. That bird needs old growth forests, so you can immediately get that connection. To get that little bird to trust you, the big human, to come sit in your hand, it feels like such an honour. People then connect with and see these species, the birds that you're literally holding in your hand, those are the ones that are going to disappear now with what we're doing in Sweden. You hear about how they're cutting down the rainforest in Brazil, it's so far away. But then you talk about how we do the same here in Sweden. We explain these big issues, but take them down into a smaller format and connect them to the place where you are at the moment." - Swedish Educator 1 (13/3/2025)

Naturskola programs take a similar approach, often by utilizing local forest ecology to engage students in the national curriculum. Activities and learnings are grounded in authentic environments. Approaches can be both biocentric and anthropocentric, and often balance both perspectives.

"It's not just about learning species or nature, it's this connection with society. We should do activities or things that connect to the close society, so it becomes real. Then you also want to create possibilities for students becoming engaged and involved. We're actually weaving in the 17 Goals of the Agenda 2030." - Swedish Educator 3 (18/3/2025)

"We want to be connected to the students' indoor learning. We have three reasons to take the students outside. One of them is health, to be moving. One of them is the curriculum, we are doing school outdoors. One is sustainability, so we want the students to connect to the forest, connect to the environment, so that they create a great feeling in themselves. So when they grow older, they will make good decisions as adults. Sustainability becomes a part of their mindset." - Swedish Educator 6 (19/3/2025)

"Every day we are outside with the students. First we do a game or something, where you have to move and laugh. Then we have the next activity where you're listening to the sounds or looking at nature, focus attention. Then we have the main part about the things we're going to teach. Then we have a reflection time with them. The students pretty often cook their own food over an open fire, or

we build camps with them and they learn how to survive in their local forest." - Swedish Educator 2 (19/3/2025)

Within Canada school systems, community knowledge is often integrated within the curriculum. This includes local Indigenous knowledge, such as lessons on traditional forest uses by Indigenous communities, and environmental management practices. Documentation explicitly includes involvement from community professionals and knowledge keepers. The curriculum also has a balanced anthropocentric and biocentric orientation, emphasizing human benefits from forests alongside ecological health, sustainability, and biodiversity conservation.

"We are here in a forest industry town, so forestry is a really big part of our economy and our history. It felt appropriate to use that as a gateway for a bunch of really important conversations about the ethics and policies of forestry, and human or more-than-human values. Forestry also has a whole suite of pretty hard, scientific skills, whether that's doing tree boring or determining the height of a tree using trigonometry. It also has some, you can call them 'dirty problems,' where there's complexity involved, lots of experimentation and experiential learning." - Canadian Educator 2 (3/3/2025)

"I've been teaching for roughly 20 years, and the more I can get students outside these four walls, the better. We have to be in here to do theory, but there's such a disconnect if we teach theory and it's never applied. Anytime we have to just learn something through repetition, it doesn't stick and it doesn't have any meaning. But if you can somehow emotionally grab the students then it's everything. Environmental science and biology is an obvious fit for forest education, but with any student you're going to be empowering them through purchases and voting. Every decision in their future will have some environmental aspect to it, and whether it's direct or indirect, every job will entail some sort of environmental aspect. Probably the biggest impact I have is just getting the students to know their land and their place. What is your place and why? I just want them grounded in that, and that means spending time there." - Canadian Educator 1 (27/2/2025)

"Part of our programming is learning about how other people manage resources. We don't necessarily go too broad. We want the students to have a place-based experience, kind of grounded in their communities. When we're working across a whole province, we make sure we're including general concepts that can be applied to local situations." - Canadian NGO 2 (20/3/2025)

6.7 Community Involvement

6 out of 10 Canadian respondents and 4 out of 12 Swedish respondents discussed pedagogy which involves community contributions, such as group projects, citizen science, and service learning. Water quality testing as well as cooking and sharing meals were examples of class projects conducted by some *naturskola* programs. Increasing access to forest spaces for community members is also a pedagogical approach of certain *naturskola* educators.

> "Within the context of our municipality and our program, the goal is to basically make forests and our nature reserves more accessible to people who haven't visited any before. Our goal is to organize it so that each citizen who has grown up here in the municipality has visited our nature areas." - Swedish Educator 10 (5/3/2025)

Reforestation, invasive species removal, ecological restoration, gifting of forest products, and meal sharing were all examples of community involvement utilized by provincial school systems, and Canadian NGOs. Some schools have also created Indigenous plant gardens or maintained forest trails as class projects.

> "I think doing whatever you can where you're at, that little piece has a big effect. It doesn't have to change the world. It just has to be a change for your community, because otherwise, how do you make change? You start where you're at and do good things." - Canadian Educator 4 (11/3/2025)

> "My ear is always down. If I get an email from somebody, I'm like how can I bring my class into this? It's constantly happening. We get out and do it. I definitely bias it towards the people who are making a difference that lead towards some sort of sustainable living or changing our ways, but community is huge. Community engagement, community collaboration, and just getting outside as a class." - Canadian Educator 1 (27/2/2025)

> "We do tree planting and turn that into environmental science, language arts, and lessons on reciprocity. We also do salvage harvesting. We do firewood work where we're cutting firewood and salvaging wood off cut-blocks and giving them to Elders." - Canadian Administrator (28/2/2025)

6.8 Teachers as Facilitators and Organizers

4 out of 10 Canadian respondents and 3 out of 12 Swedish respondents described themselves as facilitators of student-led inquiry and community organizers. Within *naturskola* and NGO curriculum documentation, teachers are

expected to facilitate active learning while providing authentic outdoor settings where students use their entire cognitive, emotional, and social selves.

The curriculum also notes that teaching outdoors inherently alters the teacher's leadership role. Thus, preparedness includes understanding how outdoor environments affect teaching dynamics, and it emphasizes the importance of teachers being safety-conscious when moving lessons from indoor to outdoor settings. Teachers are encouraged to facilitate learning rather than simply transmitting knowledge.

While Canadian educators are often not provided the same directive, many teachers have taken on this role themselves in order to provide effective forest school programming for their students. They may coordinate service-learning projects, facilitate collaborations with community leaders and Indigenous Elders, and lead discussions and simulations on forest management involving various community stakeholders.

Some educators also facilitate student-led inquiry into biological and ecological processes. Canadian NGO 3 advocates for a similar approach, where their curriculum positions teachers as facilitators who guide students in engaging with community resources.

> "It's easing up and letting the students direct more than being directed when they're outside. Not knowing all the answers and being okay with that, and letting students make inferences based on what they're observing. It's a process of learning as opposed to coming to a final answer." - Canadian Educator 4 (11/3/2025)

> "I'm just a facilitator, and bringing the students outside in a safe way. I bring props and tools like that, but really let the students guide. I'm taking what's already out there and then trying to weave in some of the curriculum. The more you do it and you're comfortable being out there, the more you can tie in what the students need to learn. Those are moments that the land taught them, it wasn't me. I just provided the opportunity."- Canadian Educator 3 (5/3/2025)

> "I've taught biology for twenty-six years and I have always had students plant a seed and grow it. When that seed sprouts and they can see it, they do get excited about it. I'll say to them, bring the seeds from your apple at lunch and we'll plant them. You don't know where that will take the students in life. They might develop a green thumb. They might want to spend more time hiking, more time exploring. You just never know. But I think the key thing is they have to grow something in order to spark an interest in it, because then they actually see where it comes from." - Canadian Educator 5 (3/3/2025)

6.9 Multidisciplinary and Integrated Curriculum

100% of Canadian respondents and 6 out of 12 Swedish respondents noted their pedagogical approach as being multidisciplinary and cross-curricular, where learning connects multiple subjects in order to enhance relevancy and holistic understanding. *Naturskola*, *naturum*, and NGO programming are often based on experiences gained in authentic outdoor situations followed by structured reflection. This involves active participation, cooperation, and practical engagement. Additionally, subjects like mathematics, biology, language, and sustainable development are all facilitated in a forest setting.

> "You can connect almost every subject in the curriculum with our forest days. You can do math and geography and everything, so it's wonderful. The students from the gymnasium schools usually have a course plan to follow, and it is everything from different trees in the forest as well as soils. They take this course and then they also receive a certificate to use chainsaws after they're done with this course." - Swedish Educator 4 (12/3/2025)

> "Life is not divided into subjects and nature is not divided into subjects, but you can fit all of the subjects within nature and society. I find it difficult to teach about society or the forest being only indoors. We need to experience them to fully understand." - Swedish Educator 5 (11/3/2025)

> "It's good to show all the cycles of the forestry business. I like to show all the classes the parts of the forest we save and parts that are illegal to cut. I explain why certain trees or areas are either saved or excluded for environmental reasons." - Swedish Education Consultant (3/3/2025)

> "I usually show the students we have a lot of cultural remains from the people living there. This shows them that we're a part of this, but it has to be a functioning ecosystem if you're going to use it. I usually also tell them the difference between a meadow and a field of wheat. This is a field of spruces and this is a forest. There is a difference." - Swedish Educator 1 (13/3/2025)

Pedagogy described by Canadian provincial educators is strongly experiential, as evidenced by the inclusion of hands-on fieldwork and practical outdoor projects. Multidisciplinary approaches are evident, integrating subjects like science, social studies, math, language arts, physical wellness, and Indigenous studies through authentic outdoor experiences.

The pedagogy of Canadian NGOs are similarly grounded in cross-curricular education, as this is how they are able to stay relevant across all provincial and territorial mandates. Activities are designed to ground student

learning in real-world applications, foster critical thinking, and encourage problem-solving in real-life contexts.

> "I particularly love teaching mitosis and meiosis in the spring. The one example that I use is to take a look at the tips of all of the hemlock trees, and they show a brighter green than the older growth, and I say to them that is the location of mitosis. It's a good visual. The students actually can see the new growth, and then they learn in the classroom what's happening at the cellular level. I also assign each student a native plant, then I had them try to find their plant outside. We go on a walk to see if we can find anything. Then they come back to the classroom and do some research. They have to research two uses for their plant that Indigenous people use them for, then they present what they found to the class." - Canadian Educator 5 (3/3/2025)

> "We spend as much time as possible in the forest. It might just be sitting in a spot quietly and observing. Then there's very directed learning as well." - Canadian Educator 1 (27/2/2025)

> "I use lots of different seasonal tools. I go according to the provincial curriculum as well. Depending on the grade level, I'll try to hit some of those core competencies and big ideas within the curriculum using the land and using nature as the teacher. You can make connections to every aspect of the curriculum by being outside and making that connection to trees, to the land, to water, and it just makes it so much more rich." - Canadian Educator 3 (5/3/2025)

> "We've created a program that revolves around the seasons of harvesting and foraging. Interacting with nature in a way that allows us to teach social studies, science, foods, math, you name it, but in a very non-traditional way. We've developed a land-based learning program that focuses on self-esteem, resiliency, environmental stewardship, and actually bringing back the excitement for learning. We wanted to create a transformative learning experience that would excite, engage, create a cohort, and work on skills of communication, collaboration, creativity, positive self-identity, and positive cultural identity. For example, we have foresters come in and we have the students do tree heights, volume calculations, and species identification. What we do with that specific activity is build out different lessons from a secondary school standpoint and build robust lessons that engage students in forestry. We use our local foresters to help students learn about science, social studies, English, and math." - Canadian Administrator (28/2/2025)

> "What we really want to develop is critical thinking. We'll give students a scenario. It might be, you manage a woodlot and you want to harvest some trees. The climate's changing, you're finding a lot of deadfall. What are you going to do with your property to make it sustainable, so that you can afford to maintain

it versus selling? What we also always tell the students is there's no right answer. There's lots of options and there's lots of issues. So what are you going to choose to focus on, and explain that concisely?" - Canadian NGO 2 (20/3/2025)

"We really want to teach critical thinking skills, those 21st century skills of media literacy and being able to make informed choices. We are hoping that people will make choices in their lives that will lead to a sustainable future and a better planet. Making sure that starting at a young age they are aware and connected to the world around them and are able to make choices that hopefully reflect a better future for everybody. All of our resources are linked directly to the Sustainable Development Goals. It really is very multidisciplinary, we are most definitely cross-curricular and that's one of the things we really try to highlight because we never want to see this as an 'add-on.' This is not an additional curriculum, but these are ways in which you can teach the requirements through this lens and through these activities." - Canadian NGO 3 (3/3/2025)

6.10 Culturally Responsive Education

7 out of 10 of Canadian interviewees and 2 out of 12 Swedish interviewees described their pedagogy as being culturally responsive, whereby Indigenous perspectives are foundational to the curriculum. Discussions of colonialism, systemic issues, and critical pedagogy were not addressed in any of the *naturskola*, *naturum*, or NGO programming. *Naturum* noted that their curriculum touches on Sámi influence over local forest landscapes.

"The people who have been living here have always been living in close relation with the Sámi. There are remains in the forest, both cultural remains from the locals living here and also the Sámi. I try not to make too much of a difference between the people who used to roam this area. There were Sámi people and also other people living here or just passing by as hunters and gatherers." - Swedish Educator 1 (13/3/2025)

Provincial and Canadian NGO curricula explicitly incorporate Indigenous knowledges and practices, including land-based learning developed in partnership with Indigenous Elders and knowledge keepers. Several educators note their personal sense of responsibility to the Indigenous nations where they teach, and how they include this in their pedagogy. Addressing the impacts of colonization and the pursuit of reconciliation is also included in curricula.

"I have taken some courses in the local Indigenous language and I try to integrate that into my teachings. I love talking about animals and the trees and the plants. Historical stories that have been shared to me and passed on, I try to

share that as well. When they're gifted to me to share then I'll share those stories, or I'll invite someone to share their knowledge, if that's available." - Canadian Educator 3 (5/3/2025)

"We're pointing out, and very rightfully so, that the colonial style of education that we engage in needs an accessibility point, a real learning piece from our environment. We want all students to engage and access learning on the land, which fits in with Indigenous pedagogy. We follow the seasonal rounds, harvesting and foraging patterns of our Indigenous communities, we work with knowledge keepers and Elders. Nature is our first teacher and we've lost that connection. How do we reopen that connection and celebrate all the wonderful things that the land can give us?" - Canadian Administrator (28/2/2025)

"When we transcreated the curriculum from the American version, one of the main things we noticed was that, because we are at different points on our journey of reconciliation, there was not a lot of Indigenous knowledge embedded. It would have been better to start by grounding our resources in Indigenous knowledge, but we're working within the context that we have. We also worked with a couple of Indigenous consultants across the country to do the same thing, to see how we can make sure knowledge is embedded throughout. That is certainly something we're continuing to work on." - Canadian NGO 3 (3/3/2025)

"The current leadership of our organization acknowledged that the foundations of this organization perpetuated colonial harms against Indigenous Peoples when they imposed a Euro-western way of being, knowing, and working on the land. Indigenous representation was very tokenized, if there was anybody there at all. We have been working with curriculum developers based in Winnipeg who have reshaped our foundational curriculum model to integrate a Two-Eyed Seeing approach. That approach now has been operating for about four years. We've integrated what is known today as The Seven Relationships of an Ethical Forest School.[1] These seven relationships have not only shifted the curriculum, but they've really shifted how the course is presented. Now our courses don't go ahead unless there is an Elder or knowledge sharer present. It truly is about bringing people and worldviews together. It's our current leadership moving out of the way so that Indigenous worldviews can lead, because we acknowledge that the colonial worldview just doesn't have the necessary level of collaboration and inclusion." - Canadian NGO 1 (19/3/2025)

[1] The Seven Relationships of an Ethical Forest School were developed by Adrian Alphonso and Lise Brown, in Winnipeg, Canada. https://experiencemomenta.com/index.php/homepage/7-relationships/.

6.11 Developing a Sense of Place

Provincial and Canadian NGO curricula encourage students to build emotional and intellectual connections to forest landscapes, cultivating a sense of stewardship and belonging. Educators are seldom able to measure how their students are able to build nature-based relationships and a sense of place, however, it is one of many aspirational goals for forest school pedagogy. Several anecdotes of students developing a sense of place through curriculum were reported by educators and administrators.

> "A student last semester who did not have any kind of capacity to engage in the environment, and no desire actually, ended up in the program. They weren't prepared physically, they weren't comfortable in that situation. Yet by the end of the five months, they felt a sense of connection because nature was the bonding piece. They were engaged and excited to share their learning in a natural environment. That accelerated their sense of connection enough that the student's caregivers noticed how they were teaching people at home how to interact with nature and asking to go on hiking and camping trips. Nature is now a place that they understand." - Canadian Administrator (28/2/2025)

> "I can't force students to develop a sense of place, I can't force them to respect nature, and I can't force them to appreciate the privileges they have. But I can give them experiences that hopefully lead them to self-realization. Hopefully those experiences mean that the students will slowly pick that up on their own." - Canadian Educator 1 (27/2/2025)

Naturskola educators comment on challenges that exist for them in achieving youth engagement. All *naturskola* educators reported that they often work with students who have rarely been to forest spaces on their own. After engaging with forest school curriculum, educators may see improvements in the student's comfort with the forest, as they develop a sense of place.

> "When we are out with students, some of them have never been to the forest next to their own home or apartment. Then they sometimes ask us if it's free to go to the forest and if they can take their families with them too." - Swedish Educator 7 (19/3/2025)

> "We notice that it's not just the small children who need nature education. We do get a lot of students in the higher ages who have absolutely no experience being out in nature. It's getting more and more common, so sometimes the day they come here might be the only time of the year where they ever step foot in a forest." - Swedish Educator 8 (3/3/2025)

> “The students are very afraid of everything in the beginning. But after a day or after an hour, they start relaxing and lying in the grass or something. They realize that it is not so dangerous. They adapt very quickly to the new environment.” - Swedish Educator 6 (19/3/2025)

> “It's a little bit challenging nowadays because the students are not so used to being outside in the forest anymore. Some can be afraid of going in the high grass or their motor skills are worse. Maybe some have difficulties with walking in the woods. We also have parents that can be afraid of letting their children out.” - Swedish Educator 9 (17/3/2025)

> “It's about making the students empowered and resilient, developing their social awareness, self-management, and relationship skills. Basically, it's about knowing yourself and others by being in nature and let the outdoors provide the tools for well-being and active learning” - Swedish Educator 5 (11/3/2025)

Swedish Former Student commented on their own relationship to their local forests as a result of their forest school programming. This included spending time in the forest outside of schooling hours and seasons, and reflecting on their appreciation for this as an adult.

> “I have, for example, been back to the same forests during summer vacations with a friend, just for picking mushrooms and being like, ‘oh, I saw some last year during a lesson in this spot, let's go there.’” - Swedish Former Student (26/2/2025)

6.12 Environmental and Ecological Literacy

Naturskola, *naturum*, and NGO programming explicitly promote environmental literacy and real-world experiences for youth, with the goal of providing a bridge between theoretical concepts and real-life application. Activities in the forest are designed to empower students to understand and engage with sustainability and environmental issues in their local contexts, while also teaching the national curriculum. Anecdotes from educators highlight the potential takeaways from students themselves.

> “We usually have a little debriefing afterwards where I ask the students, ‘what do you take with you from this day?’ Sometimes it's these things you say that they didn’t know about. It might not be what you expect, but you can tell that they listened to at least part of what you said. They took something with them from this place, and maybe that sows a seed. A lot of students are also worried about climate change. You can also see this polarization with students like it is in society now. I try to at least help them with the anxiety they have or their questions. Predators and forestry are a common discussion because a lot of them

have parents who are hunters or parents who own forests. You sort of have to be a moderator in the group between the students who have very strong opinions. The students who are just enjoying nature, they're still fascinated because you hardly ever see these really old trees and this diverse forest." - Swedish Educator 1 (13/2/2025)

"Our statistics show that almost all the teachers that we have brought out with us have written that this activity is very important for their own environmental education and for their own programs with their students. In general, a lot of students are very happy and very excited to go out with us. The second time we meet them, they're even more excited because they've been out with us already and they recognize the program." - Swedish Educator 10 (5/3/2025)

Swedish Former Student noted how their knowledge of the forest has progressed over the course of their education, and how they are able to interact with forest environments as an adult because of forest school programming.

"Before, I had a sense of freedom in the woods, but now I can also look at a bunch of trees and start analyzing. 'The way these grow, it means that this area burned down 70 years ago, but then it started to grow again. Then they probably thinned it about 40 years ago.' Subconsciously, I can kind of appreciate the management. I can get a better sense of each area. Mostly the trees, of course, but also some ground flora. Aspens, for example, are home to over 1,000 other species. Fungi and insects. So if you see a really big aspen, then you know that you probably have a bunch of woodpeckers in the area because they eat those insects." - Swedish Former Student (26/2/2025)

Provincial and Canadian NGO programming allows students to develop environmental literacy through forest management simulations, service-learning (e.g. planting trees, removing invasive species), and ethnobotany. Pedagogy aims to foster active participation in environmental stewardship and direct connections to local ecosystems.

"I tell my students, imagine going to the hospital today, but they're using the same techniques and the practices that they had 200 years ago. Imagine communicating with people across the world in the same way that we did 200 years ago. When we extract our resources I still see our resources being extracted as they were 200 years ago. Technology has just simply sped up how we did it 200 years ago. I have my students find examples to either support or argue against this." - Canadian Educator 1 (27/2/2025)

"I wish every school in British Columbia did this, because it makes learning so accessible and it introduces students to resiliency, grit development, and outdoor skills development in whatever environment you're from. It really allows for

healthy, active, engaged, and environmentally aware youth." - Canadian Administrator (28/2/2025)

Barriers to these desired outcomes still exist in the student's preliminary ecological knowledge as well as how consistently they are able to spend time in forest space. Programming is most effective for developing environmental literacy when students are able to spend as much time as possible in the forest.

"We've had the most success in the outdoor education spaces where they're already doing this type of education. Our resources just add the forest and trees perspective. They might already be doing a unit where students go to an outdoor center for birds, but now this helps to add the connection between birds and how they relate to forests." - Canadian NGO 3 (3/3/2025)

"Every year we take almost every single thirteen- and fourteen-year-old student out on the land, and we go through plant identification, plant collection, and then we do a lab using those plants. I would say it's probably 90% of the students that can barely identify a cedar or a Douglas fir, which in our ecosystem are two of the most dominant trees you're going to find, let alone any of the other plants. 10% seem to have this amazing knowledge and can name almost every plant I point to." - Canadian Educator 6 (27/2/2025)

6.13 Civic Engagement and Social Action

Provincial and Canadian NGO programming include elements of civic engagement and social action. For example, service-learning projects that involve direct environmental actions and projects designed to address community-based issues. Students simulate community decision-making processes involving local stakeholders such as Indigenous communities, residents, and industry representatives to develop a land-use plan for forestry. Examining environmental justice issues, evaluating human impacts on ecosystems, and community health are also present in the curriculum. Throughout these activities, students are encouraged to reflect on their impacts at local and global scales.

"We really do highlight the complexity of everything surrounding a forest. Unsurprisingly, across the country, people have very different opinions and views about what we should do and how we should protect our forests and our natural spaces. One of our activities gives you a couple of scenarios, and you work through this as a class, highlighting different outcomes and options. It helps to show that it's not black and white, it's not right or wrong, that there are degrees and variances of correctness in all of the ways that we can approach it. We very much acknowledge that it's not one size fits all at all." - Canadian NGO 3 (3/3/2025)

Civic engagement and social action are not explicitly described or included in *naturum* or NGO curriculum. Certain *naturskola* educators discuss how their forest school programming has organically brought about student interest in social and political issues, and the curriculum has since been adapted to develop this learning further. Spending time in the forest provides ideal conditions for engaging in these discussions with students.

> "It's much easier to work together when you're outdoors because you can talk, you can move, and you can discuss. Nature also provides a place for creativity. It's also about responsible decision making. When we work with sustainable development we discuss with the students, 'how can we make responsible decisions for the planet as well as for ourselves, how to be healthy both in mind and body?'" - Swedish Educator 5 (11/3/2025)

> "We're now trying to find more ways in which the students can engage with the local society or the town. We've started a collaboration with the city where students get to hear about environmental issues that relate to them, and they also can provide their feedback to the city people. We now have that project and we're going to run it, but in order to initially apply for the funding, we needed to get some background information from students. We came to their classrooms and we had a set of questions that they could answer about our programming using a QR code and their cell phone. It was like, 'what did you think of the contents of this outdoor experience that you had?' We also asked, 'if you had the chance to make an impact, what would you like to learn more about?' Based on their responses, we wanted to see if we could find a way to have them meet people from the city. That's why we were able to get a little bit of funding. Without that kind of pilot data from the two classes, I don't think we would have received any." - Swedish Educator 3 (18/3/2025)

6.14 Authentic Learning Experiences

Naturskola, *naturum*, and NGO provide experiential learning opportunities for youth, which allows them to be immersed in their own learning and develop real-world skills. Enjoyment and curiosity of the students in their learning is reported by educators as a common outcome of these experiences. Educators note that their students are often more open-minded to new learning experiences and skills when it takes place in a forest space.

> "I had an English class that I started to take outdoors, a few of the students would never say a word in English and said, 'I'm never going to travel, I'm going to stay at home. Why should I learn English?' Then I realised it was time to do something different with them and started to have some of the lessons outside. One day in the park I suddenly heard them talking to each other in English,

fantasizing about the different creatures and things that could happen in the forest. Now they could relax, only talk to their friends without anyone listening and in an environment that triggered their minds. And at the end of the term they passed the course. When you're in the forest, you relax. And when you relax, you can think." - Swedish Educator 5 (11/3/2025)

"I hear a lot from the students how interesting it is for them. You have to be more open to hear what they say because they are quite quiet, but they think it's great to do something else than sitting in a classroom. They love to be out in nature, walking around, having topics to solve or discuss." - Swedish Education Consultant (3/3/2025)

"Basically anything that involves physical activity is super engaging. Having activities where the students can run around or gather things, while at the same time exploring their environment. From the nerdy ones who really want to see what is happening with the trees to the sporty football players who just want to run around, everybody is engaged and everybody thinks it's exciting." - Swedish Educator 10 (5/3/2025)

"What we do is very important for several reasons. Students go out and use their body, because you have a lot of sitting indoors which is more common. Also the authentic learning experiences, to come out and see this is an oak tree or this is a birch tree, it's a big difference. It's easier to learn when you're actually out there. Sometimes we do games that are educational. Also in the long term, if we're thinking of environmental awareness, if you don't have a feeling or knowledge about nature then you're less likely to care." - Swedish Educator 8 (3/3/2025)

"We get a very good response from the students. When they get involved and are experiencing the forest with their own body, we think that they get a really nice experience. They are really working together, usually they cooperate very well. They often say by the end of the day that they are really happy that they have learned a lot. You can be surprised by some of the students that you thought wouldn't get anything from that day. Learning in the actual forest is very important." - Swedish Educator 4 (12/3/2025)

Provincial and Canadian NGO forest school programming includes real-world applications, experiential activities, and collaborative projects. Skills such as teamwork, creativity, data analysis, investigation, and problem-solving are linked to real-life scenarios in forestry. Certain educators note that spending time in the forest should be focused on student's being able to experience and engage with their surroundings, rather than imposing rigid forms of assessment such as standardized tests or quizzes.

> “I'll often incorporate some Indigenous stories, ways to remember plant identification, and aspects about the plants, because there are a ton of those stories. I have students who actually remember that and say, ‘I remember in grade eight when you taught me this story.’ There are a number of students who will now know how to make a couple of their own body products from those plants, and have told me, the chapstick we made with the native plants is the best chapstick they've used, and they've taken the recipe and continued that process.” - Canadian Educator 6 (27/2/2025)

> “I will get actual feedback from students saying the experience was really meaningful to them. It just happens that some of them are in careers that are in sciences or sustainability. That one outdoor day where we went and hiked through the forest, and we had these magical moments that are so precious.” - Canadian Educator 3 (5/3/2025)

> “We have anecdotal comments from parents, caregivers, and friends of students all indicating that they're enjoying school, they're feeling better about themselves, their health is better, and they have a better sense of wellbeing. We’ve seen a lot of really cool growth from students spending time together outdoors and having the opportunity to be challenged by weather, by environment, by the social group, and being able to solve those problems with a teacher. We're seeing engagement, attendance, and wellness, the building blocks of education.” - Canadian Administrator (28/2/2025)

6.15 Student-Centred Learning

Student-centered learning in provincial and Canadian NGO programming is evident from personalized learning experiences, choice in project and assessment formats, and opportunities for independent exploration and community involvement. Students are provided opportunities to design and carry out their own investigations, allowing them to practice multidisciplinary skills, while encouraging critical thinking and problem-solving. These methods help address diverse learning styles and needs among youth.

> “When I go out with youth it's not a huge bunch of strategies. It's just respecting nature. I’m allowing students to show me what they’ve learned in a format that makes sense to them. Allow them to make connections to what’s important to them.” - Canadian Educator 4 (11/3/2025)

> “In my environmental science class we'll do an inquiry project for the semester. I give them a whole splay of topics and the students can choose what they want to do. Within that, there's a few topics around resource extraction and resource management. One student took that on, gave me a piece of paper and said ‘here's

my project.' It only had three sets of coordinates on it, but he wrote three separate papers on three different types of resource extraction. He sent me to a clear cut and in a plastic bag his essay was sitting on a tree stump. He actually sent me to those places and it was fantastic. Since then, I've done smaller projects with my students like this, where I'll bring them into a healthy forest that has the least recognizable impact. Then I'll send them to an area of clear cut and an area of development, and they'll observe and notice the differences." - Canadian Educator 1 (27/2/2025)

Through *naturskola*, students often lead their own learning based on curiosity and interests. Educators note the spontaneous development of projects and lessons derived from student initiative. Fulfillment and achievement are demonstrated by students as a result of this educational autonomy.

"As part of our forest walk, we're walking along this river and we're trying to understand what impact the society has on the water. We thought, maybe it would be good to have a station along the river where the students get a feel for the water status and quality. A student, who herself had taken part in this walk, told her dad who works at the agricultural university with water assessment studies. He then contacted us and now we've started a collaboration. He has a station just downstream from the municipal treatment outlet, where the students get to collect water. Then that water gets assessed for nutrients and environmental DNA, to see what organisms are living in this water. It provides an educational setting where it's much easier to understand. That student probably didn't think about this potential for collaboration, but if it wasn't interesting then she probably would never have mentioned it at home." - Swedish Educator 3 (18/3/2025)

"Very often the students start to experience something or explore on their own, and then you can meet where they are and check on something that they have found, or tell the whole group more about this. A mushroom or lichen or something that was not really planned to be a part of the day, but it happened and then you incorporate it." - Swedish Educator 4 (12/3/2025)

"Outdoor education for older students is what I recommend, because they are old enough to take responsibility and they can get an assignment or solve a problem on their own and then come back and present their findings. They can discuss and reflect, and as a teacher you don't have to check on them all the time, so for me I think it's perfect." - Swedish Educator 5 (11/3/2025)

"The students are often very proud about their achievements. They have been doing things that they have never done before, and they feel like they have learned a lot and pushed their own boundaries, so they are very happy." - Swedish Educator 6 (19/3/2025)

7. Discussion

7.1 Principles of Place-Based Education in Practice

One of the most compelling outcomes of this study is the affirmation of place as a co-constructed, relational, and evolving concept. As students interact with forest ecosystems—observing seasonal changes, learning through multisensory experiences, and engaging in hands-on sustainability practices—they begin to form relationships that are deeply rooted in identity and culture (Cumming & Nash, 2015; Wright et al., 2021). These relationships are not static; rather, they are shaped over time through both routine exposure and reflective practice. This process supports the cognitive, affective, and behavioral dimensions of learning that are vital to PBE (Semken et al., 2017; Boileau & Dabaja, 2020).

Interview testimonies and documentation affirmed the presence of all PBE principles (Figure 3) within Swedish and Canadian forest schools, although some contexts lacked or prioritized certain principles over others. Both cases revealed a deep-rooted commitment amongst educators, administrators, and organizations to experiential learning, sustained place attachment, and student agency, all of which embody central PBE tenets. Evidence of culturally responsive education, community involvement, and community partnerships varied greatly across contexts, yet these PBE principles were most prominent in the Canadian case.

In both countries, forest school educators described learning methods structured around student autonomy. Youth were frequently encouraged to identify inquiry topics, construct their own learning goals, and engage with the forest in a relational, rather than extractive, manner. These pedagogical approaches align with findings from Beames and Atencio (2008), which underscore the critical thinking skills fostered through student-led learning.

Crucially, this study revealed that ecological literacy did not need to be taught as a discrete subject in order for the associated skills and learning to be demonstrated by students. Instead, these teachings could often be embedded within other curricular goals. For example, Canadian students returning to the same forest spaces for class projects simultaneously learned about ecosystem cycles, plant identification, and seasonal rounds. This aligns with the interdisciplinary and holistic nature of forest-based learning that is described by Bertling (2018) and Harris (2021). Swedish students who developed a familiarity with their local forests were reported by educators to have built a solid foundation for outdoor competence and confidence. This supports research by Fägerstam

(2013), who found that students taught in outdoor environments demonstrated improved memory retention and cognitive flexibility.

Both cases provided compelling examples for how PBE can lead to increased civic engagement and social action. Several programs supported student involvement in community restoration projects. In contexts where students were able to return to the same forest spaces repeatedly, educators witnessed students shift their individual identities from passive observers to active caretakers of the forest, emphasizing how routine and immersive forest engagement cultivates emotional and cognitive bonds (Semken & Freeman, 2008; Ardoin, 2006; Cumming & Nash, 2015). This progression from attachment to action, such as increased environmental awareness and stewardship behaviours, is further supported by Semken et al. (2017). One Swedish program developed an opportunity for students to work alongside municipal city planners, while a Canadian class undertook native species monitoring and rehabilitation in their local forests. These efforts reflect the vision of Wooltorton et al. (2020), where education is relational, reciprocal, and socially engaged.

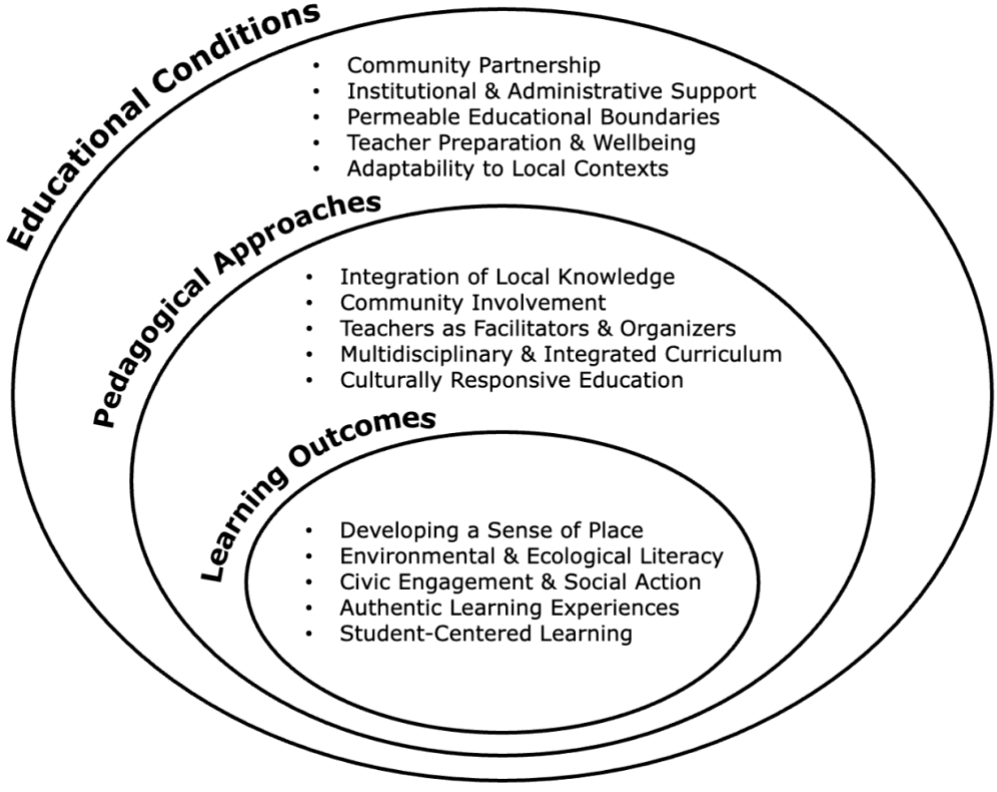

Figure 3. *PBE principles identified across both cases. As described in the Analytical Framework section, educational conditions are required for implementation of pedagogical approaches, and both are required to achieve learning outcomes.*

7.2 Forest School as a Counterpoint to Conventional Education

Forest schools emerged across both cases as a powerful alternative to dominant schooling paradigms. Where conventional education often prioritizes standardization, compartmentalization, and indoor instruction, forest school programs offered a pedagogical model grounded in flexibility, integration, and environmental immersion. Educators in both Canada and Sweden consistently expressed frustration with fixed learning outcomes and rigorous assessments, arguing that these structures stifled creativity, prevented real-world connections, and reinforced the educational hierarchies that PBE seeks to disrupt (Gruenewald, 2003; Dickinson, 2011; Mikaels, 2019).

Forest school reorients the focus of learning from the classroom to the land—an act that is both spatially and philosophically significant. When students were provided the time and space to move through ecosystems, observe seasonal changes, and engage with unpredictable environmental conditions, this led to an inherently multidisciplinary curriculum. This echoes Smith's (2002) assertion that forest schools prioritize real-world contexts and community responsiveness, which promotes life-long learning amongst youth.

Despite this transformative promise, educators described the continual negotiation required to align PBE programming with the bureaucratic expectations of formal education, often resulting in teacher burnout. While some teachers managed to creatively weave forest school into mandated learning goals, particularly in the sciences and physical education, many were familiar with the struggle to secure institutional recognition and support. One Canadian administrator noted that although their PBE model dramatically increased student engagement, attendance, and wellbeing, it currently exists as a very specialized and exceptional program. Swedish educators expressed that while their colleagues enjoy forest school as a break from structured classroom time, they remained uncomfortable with implementing this programming more routinely.

These findings resonate with those of Waite and Goodenough (2018), who argue that integration of forest school programming into mainstream educational systems often requires sustained advocacy, translation of outdoor time into academic deliverables, and constant justification. This also reflects broader critiques of formal education systems, which tend to undervalue experiential and embodied forms of knowledge (Dickinson, 2011; Knight & Luff, 2017).

Importantly, stakeholders in both countries described the social-emotional benefits of PBE as among its most valuable contributions. Within one of the Canadian examples, students with histories of school disengagement were the most positively affected by forest school. These students were reported to have developed an improved sense of connection and self-regulation in the forest. These accounts support the work of Harris (2017), who highlights the therapeutic potential of outdoor education, and Becker et al. (2017), who found consistent links between outdoor programming and improved well-being.

7.3 The Role of Context: Comparing Sweden and Canada

This study's comparative approach reveals how legal, educational, and socio-political conditions either enable or constrain the adoption of PBE, especially within the distinct cultural contexts of Sweden and Canada. In Sweden, a strong cultural paradigm of *friluftsliv* (open-air life) and the legal right of public access to nature through *Allemansrätten* have built a foundation for mainstream outdoor learning (Hansen & Sandberg, 2019; Mikaels, 2019). Swedish educators often cited these cultural and legal supports as reasons they felt regular outdoor programming to be important and relevant.

Furthermore, Sweden's national curriculum, while rigid in certain aspects, allows for sustainability and outdoor learning to be broadly adopted (Breiting & Wickenberg, 2010). Although these structures may benefit environmental education, they do not automatically translate into sustained PBE practices. For example, Sámi representation remains highly marginalized, even within a system that celebrates access to nature. This reflects findings from Keskitalo (2019), who argues that despite formal recognition of Indigenous rights, Swedish education has been slow to reflect Sámi perspectives in curricula or teacher training.

In Canada, decentralized curriculum creates highly localized approaches to forest school. While this has allowed for regional innovation and partnerships, it has also produced stark inequities (Asfeldt et al., 2022; Boileau & Dabaja, 2020). Marginalized communities often face compounded barriers to infrastructure and funding (Dann & Schroeder, 2015). Moreover, the complexity of land tenure in Canada can make sustained forest access more difficult to secure. In some cases, educators reported a reliance upon industry-owned and operated forest spaces, which hindered teachings from a biocentric lens. Canadian stakeholders also described the necessity in creating land-use agreements and relationships with local communities, which ultimately provided positive additions to their forest school programming.

7.4 Indigenous Knowledge and Decolonizing Education

One of the most salient themes emerging from this study was the potential of forest schools to function as a site for decolonization and Indigenous resurgence. In Canadian forest schools, there was evidence of intentional partnerships with Indigenous communities aimed at curriculum integration with TEK. Elders and knowledge keepers were often invited to lead programming and provided education on reciprocity and cultural revival whenever available. Students in these programs were not only taught Indigenous land-use practices, such as plant uses or seasonal harvesting, but there was also exposure to different ontologies—ways of knowing that challenge human-nature dualism (Corntassel & Hardbarger, 2019; McKim et al., 2019). These findings support calls by Tuck et al. (2014) and Wooltorton et al. (2020) to move beyond inclusion and towards a genuine transformation of pedagogy. Rather than merely tacking on Indigenous content, educators sought to reframe how learning itself was structured.

In both the Canadian and Swedish cases, the presence or absence of Indigenous leadership played a defining role in how meaningfully place was integrated into the curriculum. Where this intention and relationality was lacking or excluded, forest schools risked perpetuating colonial practices, such as cultural and language erasure. For example, Sámi knowledge systems were notably absent in the Swedish case. While educators expressed interest in and openness to Sámi perspectives and inclusion, they often lacked the institutional tools, curricular materials, and training to meaningfully include Indigenous content. This reflects systemic barriers highlighted by Keskitalo & Olsen (2024), including an absence of Sámi-led teacher education programs and insufficient curricular mandates.

The differences between these two national contexts may be partially explained by the widespread discourse and legal presence of Indigenous reconciliation in Canada compared to Sweden. For example, the TRC in Canada has made education a focal point of its calls to action, prompting school boards and ministries to adopt Indigenous-focused programming. Despite these considerable efforts by the TRC, uneven, extractive, and tokenizing inclusion persists across Canadian educational settings (Bowra et al., 2020). In Sweden, no equivalent national initiative exists, and efforts to redress colonial harms through education remain decentralized and fragmented. It is therefore important for educators, administrators, and organizations across both countries to understand how forest school programming can work to either rectify or perpetuate colonial harms and address this through Indigenous leadership.

7.5 Systemic Barriers and Opportunities for Growth

While the benefits of PBE rooted forest schools are evident, scaling and sustaining these programs faces numerous challenges. Educators in both cases described significant barriers, including insufficient funding, bureaucratic requirements, safety regulations, limited access to forest spaces, and ongoing pressures to conform to conventional academic metrics. These constraints reflect findings from Harris (2017), Knight & Luff (2017), and McKim et al. (2019), who document how outdoor learning often remains marginalized within dominant schooling paradigms.

One persistent challenge highlighted by stakeholders across cases was the perception of forest school as supplemental rather than essential. Without official recognition or integration into core curriculum, programs often depended upon the passion and advocacy of individual educators. Both Canadian and Swedish stakeholders discussed the associated risks of this kind of marginalization, such as teacher burnout and turnover of exceptionally knowledgeable staff. As Waite and Goodenough (2018) argue, structural change, not just pedagogical innovation, is increasingly necessary for forest schools to become a sustained education model.

There were, however, promising opportunities and developments pointed out by many respondents. For instance, several educators described innovative partnerships with municipalities, organizations, and local experts, which helped to provide reliable forest access, transportation, and other resources. These community-based approaches to sustaining and scaling PBE is supported by research from Boileau & Dabaja (2020) and Pugh et al. (2019), who suggest that multi-stakeholder collaborations are key to building lasting forest school infrastructure. Especially in navigating complex challenges across institutional conditions, developing community self-sufficiency was noted to be an incredibly valuable asset for both Canadian and Sweden forest school programs alike.

An additional area for growth lies in teacher training and ongoing professional development. Participants across cases repeatedly emphasized the need for regular training programs that include proficiency in delivering outdoor pedagogy, development of community facilitation skills, and increased understanding of Indigenous knowledge systems. Canadian NGOs were shown to provide these kind of impactful training opportunities. Embedding training programs across educational mandates would not only build widespread teacher preparedness, but also legitimize forest school as a vital educational framework (Karrow & DiGiuseppe, 2019; Knight & Luff, 2017).

7.6 Measuring Success

Evaluating the success of PBE-oriented forest school remains a complicated undertaking. Standardized metrics, often rooted in test scores and academic achievement, fail to capture the full range of cognitive, affective, and behavioral outcomes associated with outdoor learning. This study revealed that successful programs measured impact through a wide array of indicators: identity development and emotional connection to place, increased and sustained ecological literacy, student autonomy, and community engagement.

Many educators utilized storytelling, observation and reflection, and inquiry-based projects as tools to assess learning. These qualitative methods allowed for nuanced understandings of student growth, echoing the recommendations of Gruenewald (2005) and Wright et al. (2021), who advocate for place-based metrics that are co-designed with learners and communities. Educators in both countries recounted student demonstrations of increased environmental responsibility, awareness, confidence, and knowledge—all outcomes that may elude traditional grading, but that are inherent PBE goals.

There is also growing interest in participatory evaluation frameworks, where students help define what their own learning success may look like. This aligns with Wooltorton et al. (2020), who emphasize that authentic demonstration and evaluation of knowledge must reflect the values of those engaged in the learning process. Within a forest school context, where learning is deeply relational and place-based, success cannot be disentangled from context. This is where educational standardization may continue to fall short in the future and must be dismantled in order for PBE to be preserved.

In terms of best practices, the findings reinforce several key actions: (1) frequent and immersive engagement with nature; (2) integration of local and Indigenous knowledge systems; (3) flexibility in curriculum delivery; (4) opportunities for and development of student autonomy; and (5) cultivation of local, national, and global partnerships. Forest schools that embodied these practices were more likely to demonstrate successful outcomes across all learning dimensions (Semken & Freeman, 2008; Harris, 2021; Wright et al., 2021). Further evaluation of these outcomes should go beyond standardized assessments and must include indicators, such as self-reporting of place attachment, community engagement levels, and student-led inquiry. In answering the research questions, this study found that.

7.7 Limitations and Reflections

While this study provides valuable insights for future implementation and advocacy of PBE-based forest school, several methodological and contextual limitations must be acknowledged. One notable limitation is the focus exclusively on adult stakeholders, without direct engagement from current youth participants. This exclusion, driven by ethical, logistical, and funding constraints, limits the study's capacity to capture the lived experiences and perspectives of the very demographic that forest school programs aim to serve. As such, interpretations of student learning outcomes and engagement are filtered through adult perceptions. Future research would benefit from including student voices through ethically sound methodologies such as participatory observation, youth interviews, and other creative methods like journaling, thereby offering a more complete picture of forest school impacts.

All interviews were conducted virtually, which, while logistically necessary, may have constrained the depth of interpersonal engagement and reduced opportunities for observational insights. Virtual interviews can inhibit relationship-building and the richness of embodied, place-based dialogue that would be more readily fostered through in-person settings. A more immersive ethnographic approach involving site visits and participant observation would strengthen future research by enabling a fuller understanding of the spatial, sensory, and relational dynamics in forest school settings.

Additionally, interviews were all conducted in English, creating potential language barriers for Swedish stakeholders and impacting how certain concepts were communicated or understood. Pedagogical documents may have been interpreted through a culturally embedded lens, potentially shaping the coding outcomes. Collaborative, multilingual analysis or involvement of local co-researchers could enhance cultural sensitivity and interpretation accuracy in future cross-national studies.

Although the sample size aligns with qualitative norms for data saturation, the study includes only 22 stakeholders and does not claim to be representative of all forest school programs in Sweden and Canada. Programs included were selected based on accessibility and willingness to participate. As a result, there is potential sampling bias towards specific regions or more well-established and visible forest schools. Future studies could expand geographic reach and include programs in more remote or underrepresented regions. Employing a larger sample could also increase the robustness of findings.

While the comparative case study approach enhances understanding of how local context shapes PBE, it also introduces more complexity. For instance, differences in education policy, Indigenous relations, and forestry management between Sweden and Canada may not be easily comparable despite some thematic overlaps. Future comparative research might benefit from a more granular, intra-national comparison before scaling up to international comparisons.

This study adopts a broad and inclusive definition of 'forest' to reflect the diversity of learning environments. However, this breadth also introduces variation in the ecological and pedagogical contexts being examined. While this supports a rich exploration of PBE's adaptability, it also complicates direct comparisons and may dilute the specificity of findings. Future research could employ a more refined definition of forest school and setting, to assess how specific ecosystems influence pedagogical approach, student engagement, and learning outcomes.

8. Conclusion

Overall, this study finds that forest school programs are not simply an alternative pedagogical setting: they are a transformative space where the boundaries between curriculum, community, and environment can be reimagined. In a time of escalating environmental disconnection among youth, such spaces offer a vision of education that is responsive and inclusive. Forest schools invite us to return to the land, as a site of critical inquiry and ecological alignment.

Through examining how PBE can be implemented meaningfully and equitably in secondary forest schools, this research contributes to the growing body of knowledge on forest education. Much of the existing literature focuses primarily on early childhood education, which has created a gap in our understanding of how older youth engage with forest-based learning (Knight & Luff, 2014; Nikbay Arslantaş & Bavlı, 2022; Waite & Goodenough, 2018). Adolescence is a critical period for identity formation, social development, and wordly awareness, providing an optimal window for cultivating forest stewardship and community engagement (Miller & Twum, 2017; Nikbay Arslantaş & Bavlı, 2022; Wright et al., 2021).

This study also highlights the importance of integrating Indigenous and local knowledge systems within PBE models. Students who learn from and alongside their own communities, especially through approaches such as TEK, demonstrate more holistic ecological understanding (Krempig & Enoksen, 2024; Porsanger & Guttorm, 2011). In Canada, recent government consultations have outlined the need for a coherent national strategy towards environmental education, which emphasizes local and Indigenous leadership (Government of Canada, 2025). In Sweden, there is a growing policy response to concerns about youth wellbeing as it relates to climate change and environmental degradation (Folkhälsomyndigheten, 2024). This study helps inform how PBE can be effectively included in ongoing policy initiatives.

Moving forward, the future of PBE will depend on our collective capacity to center justice, reciprocity, and place within education. This means addressing colonial legacies, dismantling barriers, and investing in pedagogical practices that foster belonging and interdependence. As educators, researchers, and learners, we must ask ourselves not only how we teach, but where we teach, and for whom. If we are to cultivate a generation of youth who will care for the forest and each other into adulthood, then our pedagogies must be accountable to them and all generations to come. Forest school, when practiced with care and critical awareness, offers a compelling model for this vision.

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Popular Science Summary

Around the world, young people are growing up in a time of climate crisis, environmental degradation, and deep social change. In many schools, education still happens within four walls, disconnected from the environments that students will inherit as adults. This study asks a simple but urgent question: what happens when youth learn outside, with nature as their primary teacher?

Focusing on forest school programs in Sweden and Canada, this research explores how place-based education (PBE) can support students aged 13–16 in building stronger relationships with their local forests, their communities, and themselves. PBE helps students learn through experiences with the real world, and encourages care, curiosity, and responsibility for the places around them.

Through interviews with educators, program leaders, and former students, as well as a deep dive into teaching materials, this study highlights how forest school programs can create more meaningful and relevant learning. Students explore forests, work on real-world projects, and engage with Indigenous teachings that offer more holistic and reciprocal ways of understanding nature.

The findings are hopeful. When forest schools are done well, students don’t just memorize facts. Instead, they become active participants in their education. They ask better questions, care more deeply about their environment, and are more likely to take action in their communities. Forest schools move beyond tests and textbooks, towards learning that is more relational and grounded.

This study also reveals significant challenges. In both countries, forest school programs often rely on passionate individuals, on and off funding, and a lack of proper training for teachers. While the efforts of forest school programs are impressive, this study argues that a larger shift is needed—one where the education system truly values the role of place, culture, and community in shaping how and why we learn.

This research shows that when youth are invited to create relationships with their local forests, and are given the tools and time to do so, it can lead to powerful transformations. Forest schools aren’t just about going outside. They’re about coming into a deeper connection with the world around you and finding your place within it.

Appendix A: Literature and Data Collection

Table A1. *List of phrases searched using Google Scholar for literature review in the initial case selection process, including initial search date.*

Search phrase	Initial search date
"Outdoor education for youth"	December 9th, 2024
"Forest school pedagogy and principles"	
"Place based education forest"	
"Place based education"	
"Experiential education"	
"Culturally responsive education"	
"Local knowledge and environmental education"	December 10th, 2024
"Indigenous knowledge in place-based education"	
"Experiential learning in forest schools"	December 13th, 2024
"Nature based learning and student engagement"	
"Environmental stewardship and forest education"	
"Forest schools and ecological literacy"	
"Placed based education Sweden"	January 15th, 2025
"Place based education Canada"	
"Forest school Sweden"	
"Forest school Canada"	
"Community based learning and education"	January 22nd, 2025
"Community based learning youth"	
"Place based education framework"	
"Principles of place based learning"	
"Assessment and evaluation in place-based education"	January 30th, 2025
"Place based education student engagement"	
"Critical perspectives on place based learning"	
"Outdoor education secondary school Sweden"	February 11th, 2025
"Outdoor education secondary school Canada"	
"Land based learning"	
"Land based learning secondary school"	
"Outdoor education and sense of place"	

Table A2. *List of phrases searched using Google Scholar for finding data sources in the initial case selection process, including initial search date.*

Search phrase	**Initial search date**
"Skogen i Skolan"	January 3rd, 2025
"Forest school Canada"	January 29th, 2025
"Forest school Sweden"	
"Outdoor education Canada"	
"Outdoor education Sweden"	
"Place-based education programs Canada"	
"Place-based education programs Sweden"	
"Nature based learning Canada"	February 10th, 2025
"Nature based learning Sweden"	
"Environmental education high schools Canada"	
"Environmental education high schools Sweden"	
"Secondary forest school programs Canada"	February 11th, 2025
"Secondary forest school programs Sweden"	
"Experiential learning youth Canada"	
"Experiential learning youth Sweden"	
"Forest education Canada"	February 12th, 2025
"Forest education Sweden"	
"Naturskola"	
"Skogsskola"	

Appendix B: Interview Procedures

Table B1. *Interview framework and guiding questions.*

Introduction	
"Thanks for taking the time to participate, I really appreciate your contributions to my research! Do you have any questions for me before we get started?"	
Interviewer Notes	**Guiding Questions for Interviewee**
"To start I will ask about your role and experiences with forest school. For this study, forest school is defined as any curriculum which includes experiential learning in and related to the forest."	<u>Background & Context</u> • How did you first become involved with forest school? • How are your current or past roles related to forest school? • Where is/was the forest school program located?
"Next I'll be asking questions related to the forest school program's educational setting and conditions."	<u>Educational Conditions</u> • Where does the programming take place in terms of setting? • How is program partnered with the local community? • Are community/outdoor spaces accessible to program needs? • How adaptable or flexible is the program to local conditions? • What kind of administrative/institutional support does the program receive? • How are educators supported in initial training, ongoing professional development, and general wellbeing?
"Now I'll ask about the program's approaches and pedagogy."	<u>Pedagogical Approaches</u> • What are the primary goals and priorities of the program? • Would you consider the program to be multidisciplinary? • What approaches have you found to be the most effective? • How has local culture been incorporated in the curriculum? • Are students enabled to build relationships with local forests? • Are students enabled to build community relationships? • Are students given agency over their own learning?

"I'll now ask about student learning and how this is measured."	<u>Student Learning Outcomes</u> • Are there any moments or examples of student engagement that have stood out to you? • In what ways do/have students demonstrate(d) relationship building with their local forests and community? • In what ways do/have students demonstrate(d) environmental literacy through the program? • In what ways do/have students demonstrate(d) involvement in community work, volunteering, or activism through the program? • In what ways do/have students demonstrate(d) agency over their own education?
"I have some questions about challenges you/the program experiences as well as the future direction of this program."	<u>Challenges & Future Directions</u> • Overall, what are the main challenges or limitations that the program faces? • Have you made any changes to the program over time? What prompted those changes? • What future changes or improvements are being considered for this program?
"We're reaching the end of the interview now, I just have a few final questions to ask."	<u>Expanding Research</u> • Is there anything else you would like to share that I haven't asked about? • Are there any program or curriculum documents that you would be able to share with me? • Is there anyone else you recommend I interview? • Would you like to be informed about any publications, conferences, or other results of this research?
Conclusion	
"Thank you again for your time and for sharing your knowledge with me! I will reach out to you via email about any next steps or questions."	

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