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# Developing (Transformative) Environmental and Sustainability Education in Classroom Practice

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Edited by

Nicola Walshe and Louise Sund

Printed Edition of the Special Issue Published in *Sustainability*

**Developing (Transformative)  
Environmental and Sustainability  
Education in Classroom Practice**



# **Developing (Transformative) Environmental and Sustainability Education in Classroom Practice**

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## About the Editors

**Nicola Walshe** is Professor of Education and Head of the Department of Curriculum, Pedagogy and Assessment at the UCL Institute of Education. Previously, she worked as Head of Geography in three schools in the UK before going on to lead the Geography PGCE course at Cambridge University, and she then became Head of the School of Education and Social Care at Anglia Ruskin University. Nicola is co-convenor of the Environmental and Sustainability Education Research network in the European Educational Research Association and Secretary of GEReCo (Geography Education Research Collective). Her research is predominantly in the field of geography education, with a particular focus on high-quality teacher education practices in environmental and sustainability education. Nicola is currently Principal Investigator for the AHRC-funded project *Eco-Capabilities: Supporting Children's wellbeing through participatory art in nature*. Eco-Capabilities explores the impact of arts-based practice in nature on children's relationships with local environments, in doing so drawing out implications for transformative environmental and sustainability education practice.

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Editorial

# Developing (Transformative) Environmental and Sustainability Education in Classroom Practice

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We are writing this editorial in the weeks preceding COP26; as we do, wall-to-wall coverage of events and speculation of what might (or might not) be achieved across mainstream and social media channels suggest that awareness of the impacts of climate change on planetary sustainability and human and nonhuman forms of life has never been higher. Alongside this, perhaps emerging from concurrent social movements, such as Black Lives Matter, there seems to be a growing understanding that the scale of the environmental crisis is magnified by global warming's interaction with a host of other social, economic and political factors, thereby 'multiplying' the risk of poverty, disease, food insecurity, political instability, conflict, to name but a few. There is also acknowledgement that 'Global South' economies often bear the brunt of global climate change, with warming temperatures and unpredictable weather patterns driving economic hardship, food insecurity and migration. However, despite the reality of climate change and its increasingly significant global impacts, the discourse around climate change and, more broadly, sustainable development is still varied. Even within the majority who accept that climate change is taking place, there are some commentators who controversially argue that a climate apocalypse is unavoidable, while others maintain that there is still a small window of opportunity to act to avert total climate chaos. In this way, children and young people are growing up in uncertain, precarious and potentially confusing times, as the social, cultural and environmental effects of global climate change begin to permeate their everyday lives and communities and they grapple with various futures presented to them and what might be done to achieve them. As such, environmental and sustainability education (ESE) has a critical role to play, for example, in ensuring that it forms part of a broader response to the global effort to reduce greenhouse gas emissions in order to reduce the likelihood of further catastrophic climate change; however, it also needs to address emotional responses, such as eco-anxiety, and empower children and young people to address environmental issues, such as climate change, both individually and collectively, now and in the future. In this way, it might become truly transformative.

Perhaps in response to some of the challenges exemplified by the complexity of climate change education, teaching for ESE has been described as a *wicked problem* with multiple complex, context-based and uncontrollable variables that affect learning [1]. This complexity is exacerbated by its inextricable links to a wider range of unprecedented global challenges, such as the increasingly stark eruption of inequalities precipitated by continuing economic fallout from the Global Financial Crisis; the migratory crisis driven by the cumulative action of wars and climate change; and racial inequalities, xenophobia, and white supremacy. As a result, there remains discussion as to what the pedagogical approaches for ESE should be, both within and beyond formal educational contexts, such as schools. Sterling (2010/11) argued that in order to develop truly effective ESE pedagogies, we should look to transformative learning theory. Transformative learning is a potentially important aspect of ESE as it encourages learners to move beyond the simple acquisition of knowledge to a deeper and more holistic learning experience which has the potential

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to change the way they understand and conceptualise their world. As such, it signifies a change in worldview for the learner which has greater potential to impact the way they live within it. More specifically, Mezirow defined transformative learning as a process whereby [2] (p. 7):

“we transform our taken-for-granted frames of reference to make them more inclusive, discriminating, open, [changeable], and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide action”.

In this way, Mezirow’s suggestion is that transformative learning involves a shift in consciousness which affects our deeper level of understanding and, perhaps more importantly for ESE, a change in our behaviour. With this in mind, Sterling referred to three orders of learning and change [3]:

- First-order learning refers to doing ‘more of the same’, perhaps in a slightly more efficient way, without examining the values that inform that action. Due to its content-led nature, the majority of learning within formal education settings, such as schools, is often seen as first-order learning, taught through transmissive pedagogies with little critical reflection to challenge the beliefs of the learners.
- Second-order learning refers to significant changes in thinking based on the examination of assumptions and values through meta-cognitive processes. This type of learning can be more challenging as it involves the critical reflection of knowledge, values and beliefs; for this reason, it is considered to be more permanent.
- Third-order learning is epistemic, in that it causes us to profoundly challenge and reconstruct our deeper held beliefs and values.

For some, transformative learning would facilitate a shift from first-order to second-order learning, whereas, for others, it necessarily equates to the change in worldview depicted by third-order learning. For both, what is significant is that it often involves resistance on the part of the learner because it challenges existing understanding and beliefs, and often requires a reconstruction of meaning, which can cause discomfort on the part of an individual which can be difficult if not appropriately supported. In this way, it is not enough for students to learn about climate change and its associated problems; what is needed is education aimed at a shift in perspective; as Sterling put it: “Sustainability is not just another issue to be added to an overcrowded curriculum, but a gateway to a different view of curriculum, of pedagogy, of organisational change, of policy and particularly of ethos” [4] (p. 50).

While this preference for third-order learning might be seen as being desirable within the context of ESE, there are criticisms of this approach; by definition, transformative learning is promoted as being good, such that we should move towards new frames of reference which are better than others; this definition can be criticised as being culturally bound and reflect Western values and beliefs that anyone can achieve anything if they only work hard enough to overcome whatever barriers they face. As such, transformative learning can be seen as a colonial construct which does not appropriately reflect the socio-cultural and historical contexts in which learning is taking place. Andreotti further warned against this, suggesting that as [5]:

“The modern/colonial desire to know the world to control it (Gandhi 1999) prevents us from relating to the world in its full complexity, plurality, movement, entanglement and indetermination. For this desire to be interrupted, it first needs to be identified within ourselves and that is where images, metaphors, and strategic intellectual distinctions become indispensable in the context of depth education.” (pp. 147–148)

For this reason, it is important to assert the nature of transformative learning, rather than indoctrination, which encourages students to reflect on the purpose and mechanism of ESE with a view for the critical engagement with, rather than pure promotion of, sustainable development. Andreotti described this as depth education, ‘the kind of education that

addresses disavowals and denials, centers neither the teacher, nor the learner, but the world itself' [5] (p. 147). This would appear to resonate with what Sterling described as third-order learning [3].

While Sterling suggested that transformative learning is difficult for teachers to facilitate, there is some discussion within the literature as to what learning approaches or pedagogical practice might be transformational [3]. Mezirow originally saw three constructs as being central: critical reflection for deeper understanding and action, dialogue with others and experience [6]. In this way, transformational learning approaches align well with participatory, place-based, enquiry-based pedagogies which are inherently student-centred and include a range of strategies, as well as critical pedagogies which generate a questioning frame of mind, a reflective approach to our actions and the actions of others, and a commitment to do something. Such pedagogies should also provide children and young people with the opportunity to surface problematic aspects of our denial of the seriousness of climate change and the complexity of the multiple problems we need to face together and how we are not part of these problems, but also part of the solutions. However, this uncertainty is what led us to developing the theme of this special issue, to explore the pedagogy and practice of ESE in schools, with a particular focus on transformative pedagogies.

Across the volume, there are wide-ranging interpretations of and approaches to transformative pedagogies and how they intersect. In the first article, Niranjan Casinder discusses a risk with a monocultural definition of sustainability and argues for a remodelled approach to ESE that is founded on transculturalism and in touch with the cultural complexity of contemporary societies. A transcultural expertise or capacity is something that ESE teachers need to develop and acquire to adapt transformative and effective ESE pedagogies that is up-to-date with students' realities. A transculturalist approach to teaching entails a shift in attitude on the part of the teacher and builds on *knowing about* the nature of cultures and communication but also *relating to* this knowledge and considering their role in ESE. Casinder describes the development of transcultural capacity in teachers as an 'ongoing maturation through experience and professional learning' where teachers seek to develop a more conscious awareness of cultural nuance as a point of opportunity. Thus, if we want to develop transcultural capacity in ESE educators and a transformative foundation for teacher education and professional development, we need to stress that cultural perspectives are contextual and that sustainability exists as a culturally relative concept, as well as to highlight the existence of variations without feeling the need to homogenise ESE.

The second article is written by Brian McCullough and Jamee Pelcher and focuses on the need to equip students to address emerging issues regarding sustainability in the sports sector through both mentoring and student-instructor conversations. More specifically, they use collaborative reflections to evaluate transformational learning experiences to assess new levels of awareness, critical thinking and practical applications to make a change within a sports organisation to pursue environmental sustainability initiatives. Transformative sustainably learning (TSL) is described as a form of experiential learning that grew from traditions of sustainability education and transformative education and uses hands-on experiences to drive environmental or social change. This holistic approach to transformational learning focuses on involving students' heads (engage), hearts (enable) and hands (enact) to inspire and cultivate critical thinking, relational knowing and practical applications. The authors claim that it might be helpful in the classroom to promote understanding and to encourage deeper reflection.

In the third article, Elisabeth Rushton takes as a starting point the call for educators to use participatory, interdisciplinary and affect-driven approaches when responding to ethical and political climate change issues. She investigates secondary school trainee geography teachers and the ways in which teacher training programmes provide student teachers with opportunities to develop their professional identities in the context of ESE or 'to build ESE identities'. Rushton found that the trainee teachers experienced tension, conflict

and frustration when enacting their identities and that they used a range of approaches when implementing ESE in the classroom, e.g. valuing critical thinking, incorporating playful approaches, and foregrounding personal connections with the environment which adapt and endure during professional challenge, rather than moving away from ESE. The study also shows that teachers need guidance regarding identity formation and how this interlinks with practice. This work points to important implications for practice for institutions that undertake professional development for teachers, including pre-service teacher education.

In the fourth article, Per Sund and Niklas Gericke present and describe a systematic and thematic research review of different ‘selective traditions’, or the variety of ways of teaching about environmental and sustainability issues. The term ‘selective traditions’ functions as a frame of reference within a specific culture or discourse when teachers select a certain approach to knowledge and a certain educational praxis. Each tradition represents different answers as to what constitutes good teaching and relates to teachers’ approaches to the content, methods and purposes of environmental and sustainability education. In this study, Sund and Gericke focus on the specific *functions* and consequences of selective traditions for research and practice in ESE. Seven functions that are valuable for the development of ESE teaching and research are identified, among them: to analyse empirical work, to evaluate ESE teaching over time, to visualise the context-sensitive nature of teaching, to use as a reflective framework of one’s own teaching, and to promote specific teaching outcomes. The authors claim that the functions are useful in the systematic development and transformation of practice-oriented ESE teaching in teacher education and in-service training as they can illuminate the many aspects to consider when discussing and analysing ESE teaching, e.g., philosophical and educational responses to development, the root causes of developmental challenges, disciplinary traditions, curriculum changes, as well as external pressures and market forces.

In the fifth article, Johan Öhman and Louise Sund propose a model that describes and frames sustainability commitment, based on didactic theory and pragmatic philosophy, and informed by empirical studies on ESE practice. The model stresses the intellectual, emotional and practical aspects of sustainability as these are crucial for students to be able to make important choices for and contribute to a sustainable transformation of our world. The intellectual aspect is essential for giving the commitment scientific rigor and a critical stance; an emotional involvement in sustainability issues is also essential if students are to become dedicated and want to do something. However, knowledge and emotions are not much use when it comes to a sustainable transformation if you do not know how to act. As such, Öhman and Sund argue that students need to be given an active role as producers of knowledge, and teachers, in turn, need to help them to develop their abilities and desires to play an active role in this transformation.

Within the five papers within this volume, the authors reflect on current trends in transformative pedagogies and transformational learning approaches to ESE, making the case for change and development in educational practice. More specifically, the papers illustrate a series of engagements with the attitudes of the teachers (or instructors) who are implementing transformative pedagogies, the tensions and emotional load that teachers experience when seeking to develop their professional identity in the context of ESE, and how learning through ESE-informed practice involves and is intimately connected with emotions. Rushton and Öhman and Sund both provide conceptual-empirical examples from teacher interviews when teachers in their practice enact ESE-informed curricula and approaches. McCullough and Pelcher also lend some empirical weight to transformative learning by reflecting on the experiences of an instructor and a student in a sport ecology course. Sund and Gericke and Casinder extend this to offer conceptual and philosophical analysis of the research and policy literature on ESE teaching and its different functions and characteristics. Although emerging from different contexts across Europe (Sweden and the UK), the United States of America and Australia, these common themes illustrate the critical role of policy and practice in shaping high-quality teacher education to support

transformative ESE in classroom practice. However, in a complex and turbulent world, defined by intersecting challenges of environmental and social inequality and injustice, we suggest that future research in this area might help more clearly articulate what ESE has to contribute to these wider debates to make it truly transformative at a global level.

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Article

# What Makes Environmental and Sustainability Education Transformative: A Re-Appraisal of the Conceptual Parameters

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**Abstract:** As with all educational policy and practice, Environmental and Sustainability Education, if it is to be effective and meaningful, has to be designed and implemented in ways that reflect twenty-first-century circumstances, which are characterized by a globalized society in which cultural diversities amongst individuals and populations have become increasingly more complex and prominent. Using a conceptual and philosophical analysis of the research and policy literature, this paper contends that current ESE tends to be trapped within a restrictive monocultural definition of sustainability that does not reflect the different cultural perspectives towards sustainability that exist across global populations as a whole. It further argues that if ESE is to become truly transformative for students, ESE teachers need to develop a transcultural capacity as part of their professional expertise, one that is more aligned with the reality of a more culturally diverse population and student body. Only then can transformative and effective ESE pedagogies be developed that relate more closely to the socio-political context in which students of today will live.

**Keywords:** sustainability; sustainable development; cultural diversity; teacher quality; transculturalism; educational transformation; Environmental and Sustainability Education

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## 1. Introduction

As the twenty-first-century has progressed, one of the more dominant trends of school education has been a growing awareness that education in this era has an increasing obligation to prepare students for life in a world with two distinct characteristics: the dynamism and complexity of global societal change, and a new context in which the assumptions that had guided past decision-making are becoming increasingly questioned [1,2]. This is true for the teaching of Environmental and Sustainability Education (ESE) as much as any other area of learning and teaching.

The challenges of addressing such dramatic changes in societal processes through education are now often phrased in terms of the need for transformation. However, the exact nature of educational transformation, or the types of criteria that make an educational phenomenon transformative, are not universally agreed upon concepts, and its meaning is often highly debated [3] (p. 2). As an abstract concept, the idea of a transformation incorporates a complete change or shift from what has gone before, with the implication that the result has been an improvement on what has been in place previously. In the current period, writers have often summarised this paradigmatic shift as meaning that students now need to be taught twenty-first-century skills to enable them to meet the demands of this new twenty-first-century global society [4]. However, beyond this general implication, there are diverse opinions on what or who determines the nature or degree of that change.

In general education, it can be argued there have generally been two ways in which a transformative type of change has been perceived. Both trends focus on the common criterion that transformation involves a distinct break from existing patterns [5,6]. Within this general frame, the first interpretation has tended to focus predominantly on the processes of teaching, or pedagogy, whereas another centers more on the impact of these techniques and



processes on changing student outcomes; however, they are measured. Thus, Lynch and Curtner-Smith posited that the goals of transformative pedagogy should be to “promote students’ self-examination of their core values and beliefs and an understanding of those who have different core values and beliefs from their own” [7] (p. 360). Coutts extended this further by focusing on student engagement whilst also “acknowledging students’ experiences and emotions while helping them to transform any problematic perspectives that might be inhibiting their learning” [8] (p. 496). In particular, the debate has reflected on whether the notion of transformation is defined by the effect of the pedagogy on student learning or in the nature of the pedagogical approach itself; for many, it is the former, or what has been changed or transformed within the individual student. For others, instead of the pedagogy being the catalyst of change, it is instead the educator as a person who may be transformative [7] (pp. 360–361).

In the specific educational field of ESE, notions of transformative pedagogy have tended to be more specific. Generally, ESE researchers have taken the line that the transformation that takes place as a result of the educational initiative has to be within the student, with particular emphasis on ESE being seen and used as a vehicle for developing student abilities in critical thinking about social justice and ethical considerations: “empower(ing) students to critically examine beliefs, values, and knowledge with the aim of developing new epistemologies, center multiple ways of knowing, and develop a sense of critical consciousness and agency” [9] (p. vii). Other ESE researchers, such as Hajer et al. argue that this is the only way in which the Sustainability Development Goals (SDG), developed through the auspices of the United Nations, can be addressed educationally, as it enables students to become more cognisant and aware of the importance of engaging all relevant stakeholders in matters of sustainability: “not only governments but other agents of change such as businesses, cities, citizens and civil society” [10] (p. 1653). It is in relation to such considerations that the potential for compatible links between ESE and global citizenship education has been noted [11,12].

It is problematic, however, that these educational interpretations of transformation, both general and ESE-related, tend to marginalize two key considerations. The first is that the educational focus on transformation has been predominantly on the pedagogical approach adopted by teachers and the impact of these on student outcomes, but not on the professional expertise of the teachers themselves to develop effective ESE, especially in relation to the contexts in which ESE education is taking place. As will be discussed in the next section, the issue of teacher quality has been one of the particular universal concerns over the last decade or more. If pedagogy is to be developed with transformation in mind, then policymakers need to ensure that teachers have the foundational skills and knowledge to do so in the present as well as in the medium- and long-term future. This applies to teachers of ESE as much as any other area of learning.

The second problem is that, regardless of whether ESE transformation is student-centered or revolves around the actions of the teacher, as in the case of pedagogical change, the wider discussion does not take into account the notion of educational transformation is essentially a value-dependent construct; it is dependent upon the context in which the change has taken place. What appears to be a dramatic shift in one era may be seen as being no more than self-evident in another, and what appears to be transformative in one socio-economic context is not necessarily able to be classified as such in a different instance. The signifier, or signifiers, of what makes any particular pedagogical change transformative, therefore, depends very firmly on the conception of what is meant by ‘transformation’ in the context of the focus of the transformation. Since context can be both temporal and spatial, in that it incorporates perspectives that are both time and place-specific, the mark of educational transformation cannot be assumed to be constant from place to place. Included in that context is the demographic, cultural environment, and it is this particular aspect of educational transformation in the area of ESE that is of especial concern in the modern era.

Consequently, the theme of this paper, which takes the form of conceptual and theoretical analysis based on philosophical consideration of existing literature on ESE theory

and practice, is the primary importance of placing a high priority of cultural context to the development of transformative ESE teaching and learning. Using the concepts of transculturalism and transcultural capacity as a background framework, this paper contends that effective ESE in the modern era will not be possible until it acknowledges the reality that contemporary notions of sustainability and ESE tend to omit consideration that cultural perspectives are contextual and vary from place to place; they are not universal. It must then also prioritize the teaching of ESE by teachers who have demonstrated transcultural capacity. It is this element of professional expertise that will enable the effective teaching of ESE in the different cultural contexts that characterize twenty-first-century global society and varying interpretations of ESE principles. What makes a pedagogy transformative, whether in ESE or in any other educational field, is the degree to which it reflects or instigates a new perspective on the world being studied. In the modern era, that new perspective is not just exemplified by notions of a global perspective, but also in the capacity of teachers to incorporate the implications of that global perspective into their broader educational attitudes and approach, which is a key aspect of personal and professional transcultural capacity.

## 2. Sustainability, Cultural Context, and Transculturalism

### 2.1. Sustainability and Cultural Context

It is now well accepted that one of the major impacts of modern globalization since the early 1990s has been the increasing cultural complexity and diversity of populations across the world. In the same vein, there has been an increasing, if slow-moving, movement towards the reality that these cultural intricacies demand a greater awareness and incorporation of respect for that cultural diversity in educational initiatives and implementation. Consequently, for ESE education to be truly transformative in the twenty-first century, it needs to incorporate a world perspective that not only acknowledges cultural diversity, but also implements and incorporates that perspective into the attitudes of the teachers who are implementing those pedagogies.

To date, however, it is arguable that conceptions of sustainability—and therefore ESE itself—have not fully acknowledged the reality of that global demographic complexity; they have attempted to be culturally neutral rather than culturally inclusive. In this context, inclusivity does not just mean that conceptions of sustainability used in education have to be diverse in their construction themselves; it also refers to the principle that sustainability needs to recognize and acknowledge the *possibility* and *reality* of culturally diverse interpretations of sustainability. The premise behind this argument, which, in essence, is that cultural context is an important consideration in societal issues, is not new in itself. For instance, standard transdisciplinary research (for example, see [6,13]) highlights the importance of taking into account ‘the particularity of local culture’ [14] (p. 104). Within Geography, others argue that the nature of geographical fieldwork both demands and facilitates the evaluation of cultural context, especially in ESE [15].

A major example of how the cultural context of sustainability has been minimized in current formulations of ESE is illustrated by what is arguably the most significant justification for ESE to be taught as a key component of school education: the United Nations Sustainability Development Goals (SDGs), which can be seen to both be a consequence or reflection of a dominant global opinion about how future interactions between people and the planet on which they live need to take place [16]. The SDGs tend to encompass two general elements in their construction of sustainability. First, there is the notion of sustainability as reflecting a responsibility towards future generations, in which sustainable development is defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” [17].

Secondly, the SDGs make a clear statement that sustainability is not just a consideration of the natural environment, but also how that environment is used in the goal of improving life existence across facets of human life and society, with a specific emphasis on equality, equity, and social justice: “Sustainable development calls for concerted efforts towards

building an inclusive, sustainable and resilient future for people and planet” [9]. In short, it is a classic reflection of democratic iterations of educational philosophy that date back to the work of John Dewey [18].

Educationally, the values inherent in such a notion of sustainability have an underlying holistic theme; there is an emphasis on global unity and/or interdependence of global society, with the natural environment offering a base point that educators might use as a foundation for ESE: “sustainable development is a process of economic and social change designed to produce an environmentally sustainable economy and a just society” [17]. However, expressions such as Maude’s “a just society” [19] (p. 19) are problematic in themselves, as they imply that there is one particular form of societal justice that is a self-evident goal for all. This lack of nuance minimizes, and even ignores, the reality that notions about the nature of a just society are not universal; indeed, opinions about the nature of ‘justice’ and its implications for human community and society are as diverse as the variety of expressed perspectives about culture and cultural heritage. Within whose value framework, then, are judgments about a just, sustainable society being made? When does it become valid, if ever, for one particular cultural perspective to hold sway in a global socio-political environment that champions the rights of separate and group cultural identities for self-determination and self-expression?

Similar false visions as to the uniformity and independence of cultural ways of thinking are reflected in other educational spheres. One of the most prominent of these are the Programme for International Student Assessment (PISA) programs conducted through the OECD [20], the bona fides and accuracy of which are promoted as aiming for as much cultural neutrality as possible [21,22]. However, as has been argued elsewhere [23–25], such assumptions are essentially illusory; all cultures have values and priorities built into them that determine an individual’s perspective on the world around them, and any attempt to devise an even partially culturally neutral entity, as opposed to openly and fully acknowledging and allowing for differences in cultural outlook, is relying misleadingly on either a belief that all cultures have the same value base or an assumption that there is a natural uniformity across cultures in people’s attitudes that is self-evident. In the case of sustainability and ESE, there appears to be a rejection, or, at best, an unawareness, that there is a certain degree of cultural variation about the conceptions and implementation of sustainability concepts, where attitudes and thoughts about sustainability can even vary within the one cultural group. How these variations are reflected in reality will be considered more deeply as part of the discussion in the next section.

## 2.2. *Transculturalism and Cultural Context*

In recent years, teacher quality has become one of the central features of school education research and governance. Amongst modernized economies ranging from Australia, New Zealand, the United Kingdom, the European States, Singapore, and India, this has been translated into governments putting in place widely implemented regulatory measures designed to monitor and improve the work of teachers. Invariably, such measures have included sets of professional standards for teachers that guide both teacher education and teacher accreditation, such as the Australian Professional Standards for Teachers [26], as well as the provision of considerable funding for ongoing professional learning, often through statutory authorities, of which the Australian Institute for School Teaching and Leadership [27] and the National Institute of Education in Singapore [28] are prime examples.

However, within these myriad sets of professional checks, relatively little space has been allocated to addressing whether teachers have the specific personal and professional expertise in teaching cultural understanding in a manner that reflects the demographic, cultural complexities of the modern era. Too often, such expertise is assumed to be incorporated into standards about teachers having a professional duty to be aware of the various factors that may influence student experiences and outcomes in education, including gender, ethnic background, socio-economic status. In Australia’s case, teacher

accreditation in cultural understanding is restricted to one of eight Professional Standards that is centered along teachers knowing their students, plus two specific descriptors across all the Standards that refer to specifically about understanding the teaching of Aboriginal and Torres Strait Islanders [26]. It is assumed that such prescribed educational elements will be sufficient in a world where demographics, cultural diversity, and heritages are becoming ever more complex.

The argument that approaches to teacher education and ongoing professional development need to be reconfigured in order to meet the necessity of transforming school education, ESE included, has been a feature of the relevant discourse for some years (for example, [4,29,30]). Within this broad area, the specific case that the education and training of teachers in cultural understanding are far from adequate in the modern context is a theme that has formed a key plank in my published research over the last decade or more (for example, [23,31–33]). Space does not permit a full explication of the argument within this paper, but the key features of the contention are as follows. Its relationship to the teaching of ESE, and the cultural tunnel within which current ESE tends to be framed, will be addressed in the next section.

The complex nature of cultural diversity in populations in most countries of the world in the present age demands a cultural capacity within teachers that goes beyond the past and existing paradigms of multi- and interculturalism, regardless of what subjects they may be teaching, including ESE. Both these existing frames of cultural understanding and education are conceptually wanting in the current age because they are both premised on the belief that cultural differences are problems that need to be surmounted; they are difficulties founded on divisions between cultures. Such premises are not unexpected as they both reflect the times of their origins, which predate the era of contemporary globalization that began in the early 1990s, multiculturalism in the 1960s, and interculturalism in the 1970s. It was not until the 1990s that the past spatial separations of human cultures and heritages began to become less distinct and fluid as migration and work patterns changed in response to the growing incorporation of national economies and societies into a more interdependent and integrated whole. Despite such disparities, both multi- and interculturalism still underpin current programs in student cultural education and teacher education. These can be seen in the phrasing and emphases of national curriculum statements in countries such as Australia [34], New Zealand [35], and Singapore [36], as well as European initiatives, to develop teacher expertise in cultural education [37].

The essence of a transculturalist approach to teaching, as well as the personal and professional capacities of teachers to implement such an approach, is that it entails a shift in attitude on the part of the teacher; it is not just the acquiring of competency through a certification or professional learning process; cultural differences within a population (or school class) are not just barriers to be overcome. Instead, cultural difference in society is perceived and treated as the natural state of that society; difference is expected, absorbed, and managed with a positive frame of mind. The transcultural focus on a shift in attitudes within the individual is a key separator from multi- and interculturalism, with those two approaches tending to stress knowledge and awareness about cultural ‘Others’ as points of achievement. However, knowing about the nature of cultures and communication between them is but a job half completed; transculturalism builds on those prior stages to develop a more conscious awareness of cultural nuance as a point of opportunity, not a dilemma, to acquire an attitudinal capacity towards teaching and learning that looks beyond the common ‘place culture’ mindset. In that sense, the development of transcultural capacity in teachers and its ongoing maturation through experience and professional learning provide a truly transformative foundation for any educational program, including those in ESE. They learn to “think differently about difference” [38] (p. 1), enabling themselves to “foster (their) own self-awareness and open-mindedness about difference before working with students to foster theirs” [38] (p. 2).

To that end, the specific contention of this paper is that ESE education and ESE teachers need to become far more transcultural in their educational perspective, rather than to make,

perhaps unconsciously, prior assumptions about the nature of sustainability in relation to the cultural context, in which sustainability is seen to be a culturally neutral concept that does not warrant specific attention to the validity of differences in ESE conceptions and implementation. In short, ESE teachers need to be far more culturally contextual to the needs of students in their learning area, the global nature of education in general, as well as the specific community context of the school in which they are working.

### 3. Discussion

In arguing for a remodeled approach to ESE that is founded on transculturalism, the overriding factor is one of societal relevance. The teaching of ESE cannot be divorced from the wider context of what education in the twenty-first-century century needs to acknowledge: the reality of increasing complexity of cultural heritages, both of individuals and society, a characteristic that is very much part of an interdependent global society. The author acknowledges here that recent years have highlighted the flaws of contemporary globalization through such phenomena as the emergence of strong populist and nationalistic political leaders, but that is a debate for a different forum.

In broad terms and as expressed by the United Nations, through the SDGs, which can be seen to be the foundation of modern ESE, the idea of sustainability has three main aspects: “economic growth, social inclusion and environmental protection. These elements are interconnected, and all are crucial for the well-being of individuals and societies.” [16]. The difficulty here is that, whilst it acknowledges that all cultures “and civilizations can contribute to, and are crucial enablers of, sustainable development” [39], such terminology avoids addressing the inevitability of what to do if cultural priorities clash, even though the underlying implication of the phrase of social inclusion is that there are multiple views that need to be acknowledged and incorporated. Instead, the language defaults to a reiteration of the broad goals of a sustainable society expressed in a democratic conception of sustainability that is based on ‘Western’ values:

*“By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture’s contribution to sustainable development.” [39]*

In doing so, the assumption is made that there is an ultimate universality in the nature and processes of sustainable development and that the same exists for ESE. That universal perception is guided by the values of a socio-economic model that dominates current global thinking and action; a global economy based on an integrated trade system that promotes industrialized economic growth and therefore sees sustainability in that context.

Consequently, I contend that the major conundrum that ESE is facing, and the major barrier to genuinely transformative ESE, is one of global relevance; that is, the broad framework of ESE tends to avoid the inevitability that it is, like all educational policy, fundamentally a cultural construct. As a result, ESE tends to default into an overly simplified, environmentally framed Euro-American or ‘Western’ notion of sustainability that emphasizes conservation of the natural environment as the prime guiding factor in future human social and economic development, without ever really addressing the underlying dilemma of how to achieve improved living standards for all in a global context of diverse cultural perspectives.

The nature of this limited cultural perspective can be clearly seen in sustainability case studies around indigenous cultures. One example can be seen in a 2020 major review of Australia’s Environment Protection and Biodiversity Act, which is an illustration of the type of government policy that is generally accepted as being central to the principle of sustainability in Euro-American cultural perspectives. One of the review’s major conclusions and criticisms was that the legislation prioritized only one cultural perspective:

*“Western science is heavily prioritised in the way the EPBC Act operates. Indigenous knowledge and views are diluted in the formal provision of advice to decision-makers.*

*This reflects an overall culture of tokenism and symbolism, rather than one of genuine inclusion of Indigenous Australians.” [40] (p. 6)*

An assumption of cultural priority is particularly noticeable in situations where different indigenous perspectives are in play, a theme that ESE in Euro-American constructs tends to minimize, despite the importance that it also places, somewhat paradoxically, on indigenous inclusivity in socio-political policy. One more recent example illustrates how sustainability can be interpreted so very differently within one cultural context, let alone between multiple contexts. Within the Macuxi tribe in the Amazonian state of Roraima, Brazil, the people are split into groups that have very different ideas on how to enact their rights of self-determination in building a sustainable future for themselves and the place of mining tribal lands in achieving that goal. Whereas one group favors its authorization in order to provide the financial base for modernization of tribal life, another is far more resistant to the approach, being concerned about the environmental impacts of such a strategy on the sanctity of tribal homelands and the Amazonian rainforest [41].

In another example that highlights the differences between indigenous outlooks on sustainability and more Euro-American perspectives, a recent Australian report [42] highlighted that sustainability, in terms of Australian and Torres Strait Islander perspectives, contains a specific rejection of Euro-American modern capitalism in its imperative that it is essential that people’s spiritual links to Country are maintained:

*“Our practices and tools bring people together to value the ancient and continuing knowledge and wisdom of First Nations/Indigenous Peoples in the ecologically sustainable development and management of land, sea, skies and waterways in Australia and across the world . . .*

*The sustainability of our lives on Country is dependent upon our knowledge systems . . . Indigenous Peoples and partners in other countries who also seek ways to keep culture and connections with Country alive, overcoming the challenges posed by colonisation, industrialisation and capitalism.” [43] (4)*

The use of Indigenous knowledge in the process is also an underpinning of sustainability in that specific cultural context—

*“The programs that support these cultural hubs also sustain people on Country, and build strength in knowledge.” [44] (p. 30)*

*“The diversity of our knowledge systems, and acknowledge and promote Australia’s history of peopled land- and sea-scapes and our connections to Country over millennia as the way forward for sustainability.” [45] (p. 108)*

—along with a clear realization that different Indigenous cultural groups within Australia do have divergent notions of what sustainability entails and the difficulties that this creates in designing a national Australian Indigenous carbon economy [33] (p. 107) [34] (p. 69). For some, who have secure land tenure, the focus is on the use of traditional fire management practices:

*“For example, Indigenous Peoples are building enterprises founded on their knowledge of traditional fire management and experience in burning Country the right way. In northern Australia Indigenous fire methodology, based upon a systematic mosaic approach to early dry season burns across Country, has demonstrated both greenhouse gas abatement (compared to uncontrolled wild fires) and carbon sequestration benefits.” [46] (p. 69)*

In contrast, other tribal groups with less secure land tenure “...are looking to secure payment for carbon offset management services through their land and sea management units” [46] (p. 69).

#### 4. Conclusions

It is transcultural nuances such as these that need to be viewed in a more central light in ESE education if it is to be genuinely transformative and teach students a more accurate picture of how sustainability exists as a culturally relative concept in the modern

era, one that is evident in the realities and practicalities of implementation. Concomitantly, for that shift to occur, there needs to be a salient focus on developing transcultural capacity within ESE educators, providing them with the foundation to recognize and highlight the existence of such variations without feeling the need to homogenize ESE into one cultural perspective. In this, policymakers and educational leaders need to recognize that ESE teachers are no different from school educators who work in other learning areas; developing a transcultural mindset will enable them to “move beyond assuming that broad-mindedness and a willingness to tackle the complexity of the world at large just happen naturally in such an environment” [30] (p. 10). Space and the defined parameters of this paper do not permit a more detailed research-based discussion as to how these transcultural capacities can be developed in teachers; instead, see, for example, [31,33].

The future of ESE globally is at a form of crossroads, in that, recent global decisions, such as the setting of carbon emission targets in Australia, Europe, and some parts of Asia, have highlighted that the middle of this century is the point of sustainability no return in terms of global warming. If ESE is to prepare students for the position in which they might find their world at that time, then it needs to become fully transformative by adopting a transcultural approach to pedagogy and specifically prioritize the expertise of ESE teachers to implement such an approach. In doing so, ESE education, unlike its current state, will become not only inclusive of the existence of multiple cultural conceptions of sustainability but will also become an exemplar of how to adapt any aspect of school education to the demands of twenty-first-century global societal shifts in a constructive, transformative and effective manner.

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### Short Biography of Author

**Niranjan Casinader** is Adjunct Senior Lecturer in Education at Monash University and a semi-retired educational consultant. Originally educated as a geographer, he worked as a teacher and educational leader in secondary schools and international education for over 30 years before moving into academia, teaching and researching across postgraduate and graduate courses in curriculum, assessment, pedagogy, and Humanities education. He has been recognized professionally for his work as an educator in Australia and internationally. Niranjan's research remains focused on three principal strands: the impact of transnationalism and globalization in education, particularly in relation to the influence of culture on curriculum, pedagogy, and thinking; the teaching of Geography and other Humanities subjects in schools, with a particular interest in inquiry and problem-solving thinking; and the role of education in British colonial policy and practice, with an especial focus on its relevance to contemporary society. His current research projects are concerned with: (a) the building and evaluation of the transcultural capacity of teachers, with particular reference to their role in a globalized educational environment; (b) the nature of cultural education in schools, with particular emphasis on the role of geographical education; (c) the role of school alumni groups in facilitating migrant experience; (d) inquiry-based teaching and learning across the disciplines.

Article

# Instructor–Student Mentoring: Strengths of Transformative Sustainability Learning and Its Direct Application to Impact Industry and Curricular Refinement

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**Abstract:** There is a growing need to educate students about the applications of environmental sustainability to current and future jobs. One method that has emerged to teach this application is transformative sustainable learning (TSL). Instructors can use TSL to understand better how to integrate sustainability topics into seemingly unrelated course topics. Thus, the purpose of this study was to explore the effectiveness of a series of TSL courses in a graduate sport management program. To this end, a collaborative reflection guided the data collection from weekly one-on-one conversations between the researchers (i.e., instructor, student). Results aligned with TSL themes (i.e., head, heart, hands) and suggested that the intentional TSL course design and scheduled conversations benefited both the instructor and student. The student experienced an in-depth experience to understand and apply course concepts. The instructor was able to gain better insights to structure the class and create assignments adapted to meet student needs through collaborative reflection during mentoring sessions.

**Keywords:** transformative sustainability learning; collaborative reflection; sport and the environment; sport ecology

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## 1. Introduction

Sport instructors educate students on past, current, and future issues within the sport sector and tangential industries. They convey how those topics relate to or mirror more significant societal problems, and they empower students to know how to leverage sport to promote positive social change [1]. Not only do these instructors reflect on the past, but they also look towards the future to equip students to address emerging issues regarding sustainability in sport—inclusive of health, social, economic, and environmental aspects [2]. Practical and hands-on learning experiences are essential to a student as she advances her career to apply course concepts in applicable settings. These opportunities can come through intentional experiential learning (i.e., the knowledge through reflection on real-world and applied work experience) [3] and, similarly related, service-learning (i.e., community service component with designed reflection opportunities) [4]. Such educational opportunities provide a student with active learning experiences, increase her confidence to identify and confront these issues, and help them develop a deeper awareness of social problems within sport [5]. Yet, more concentrated examinations are necessary to refine the applications of such learning experiences leveraging new pedagogical techniques or addressing emergent issues in the sport sector (e.g., environmental sustainability).

Despite the increased offerings of these opportunities in sport management curricula, few courses focus on sport’s relation to its impact on the natural environment [6]. Sport ecology, the study of the bidirectional relationship between sport and the natural environment [7], courses increase the relevance for conceptual understanding and practical

application through transformative sustainable learning (TSL; [8,9]). Orr and colleagues proposed that TSL courses use accessible contexts (e.g., sport business) to teach complex issues (e.g., climate change, climate vulnerability, sustainable supply chain, circular economy). Moreover, TSL experiences make a lasting impression and enduring impact through hands-on practical applications of content through experiential learning and service-learning modalities [10] to engage new academic disciplines (i.e., sport) in abstract issues (i.e., climate change).

The sport ecology subdiscipline and its application to sport management pedagogy are still in their infancy [9]. Therefore, it is crucial to understand the student learning experience to develop a deeper understanding and advance sport management students' understanding of how climate change impacts sport *and* how sport impacts the natural environment. Such an understanding comes from a direct feedback loop where students' feedback helps instructors improve the curriculum and its delivery/ability to provide a rich and in-depth learning experience [11,12]. Thus, the purpose of this paper was to use collaborative reflection to evaluate the effectiveness of TSL in the classroom. This paper presents the background of this learning process by reflecting on the experiences of an instructor and a student in a sport ecology course. Collaborative reflection has been used to evaluate transformational learning experiences [13] to assess the new levels of awareness, critical thinking, and practical applications [14]. As a result, instructors can better understand how to integrate sport ecology topics into curricula and new experiential learning opportunities through TSL.

## 2. Literature Review

### 2.1. Sport Ecology and Education

There is considerable evidence of humanity's contributions to climate change [15]. This mounting evidence has led to a push within broader academic circles to educate students on the 'fixes' or solutions to alleviate institutionalized practices that result from detrimental human behavior and activities that deplete the natural environment [10] and is no different for the sport management academy. Sport ecology, or the study of the bidirectional relationship between sport and the natural environment, encompasses various focal research areas under sport management–governance, management, facility operations, and event management, among others [7]. One area that needs further exploration is integrating sport ecology topics into and across sport management curricula.

Mercado and Grady [6] found few course offerings focused on sport and its relation to the natural environment. Such curriculum includes standalone courses and modules within broader sport management courses. Despite the shortage of offerings, these classes add tremendous value to challenge and educate students on current environmental matters and promote ecological sustainability in their professional careers [16]. While researchers [16] examined whether students' environmental values increased in sport ecology standalone courses, their results were inconclusive. These researchers omitted details about the course's structure and engagement with the students, exploring sport ecology courses further. Specifically, researchers should examine the anthropocentric relationship between humans and the natural environment among current and future sport practitioners [17].

Howe [17] posits that sport participants use nature as a means to fulfill their desire to engage in sport, recreation, and physical activity. Consistent with Howe's position, sport practitioners may see the natural environment as a means to an end rather than an invaluable and indispensable asset. This practitioner-nature gap can be exacerbated because there is more separation between practitioners and nature due to a lack of involvement and interaction with nature. This separation of sport and nature is an example of anthropocentrism within sport among participants, but it also includes practitioners. Sport practitioners' inaction also exemplifies this relationship gap to address climate-related issues in the sport sector [18,19]. Like Howe, Sartore-Baldwin, and McCullough argue that the lack of action in sport is due to the disregard for the natural environment due to anthropocentrism. There is a focus on profits over plant rather than balancing the two for

the good and wellbeing of sport to continue. Anthropocentric systems exist through institutionalized systems thinking in which human domination over the natural environment is unchallenged. To challenge this anthropocentric system, Sartore-Baldwin and McCullough called for ecocentric management within the sport sector.

Ecocentric management focuses on nature's value for nature's sake [20]. This approach encourages the health of the natural environment (sustainability/conservation) to protect and preserve it for future generations and sustain the spaces to consume sport, recreation, and physical activity. Thus, it is necessary to build off the work of Mercado and Grady [6] and Greenhalgh and colleagues [16] and improve sport ecology-focused courses and assignments to better orient our students to protect and preserve the natural environment. Furthermore, transformative sustainability learning can advance ecocentric management education by creating ambassadors among students as they engage in TSL opportunities. Moreover, sport management instructors better frame their courses and overall learning objectives with TSL to advance learning and empower their students [9].

## 2.2. Transformative Sustainability Learning

Transformative sustainability learning (TSL) is an elevated form of experiential learning that utilizes hands-on experiences to drive environmental or social change [10]. TSL pedagogy provides students with immersive experiences that showcase ethical reasoning related to human-nature interaction [21]. Learning objectives using this approach seek to improve skills, provide a platform to heighten knowledge of the resulting challenges of climate change, and improve favorable attitudes towards the natural environment [22,23]. Such a pedagogical approach can engage students differently within the same course [24]. Jayakumar and colleagues, for instance, found that a majority of students are visual and auditory learners. Visual learners learn through pictures, demonstrations, displays. Audio learners prefer spoken words from others. Kinesthetic learners like the physical experience or engaging in practical hands-on applications of the course material [25]. TSL offers a pedagogical approach that engages these various learning styles and has a broader reach and appeal to the student population.

TSL consists of three educational concepts (i.e., engage, enact, enable) to involve the student's head, hands, and heart [10] in critical thinking exercises and practical applications to bridge the practitioner-nature gap in sports [9]. The educational experience incorporates all three aspects as students interact with course material, concepts, assignments, and discussions. Most critically, TSL seeks to engage the heart. The emotional response to social issues, including environmental issues, significantly influences positive behavioral changes [25,26]. Students reflect on their educational experience and examine how they 'unlearned' preconceived notions (e.g., sport and the natural environment) and how their attitudes become more favorable towards social change [27].

Research focusing on experiential learning is popular within the broader sport academy [1,28]. In particular, experiential learning research within the sport for development and peace literature has received considerable attention to address sports-related social issues [29]. Despite prior researchers promoting environmental sustainability content [5] and examining the outcomes of such courses [16], TSL has received little to no attention with regard to the application to the sport academy and in the literature examining sport ecology [9]. The researchers who examined such courses did not discuss the critical components of the TSL (i.e., head, hands, heart concepts). Orr et al. [9] suggested three ways to apply TSL to sport ecology courses or special topics in other sport management courses to promote more ecocentric leadership skills within the sport management curriculum. Venue tours, green teams, and living labs are ways to engage students at various education levels in TSL and promote awareness, change environmental attitudes, and inspire action.

At a basic level, venue tours can introduce various systems and initiatives that sport organizations have implemented. These tours can explore the processes to implement environmental programs, address operational challenges, and assess ecological perfor-

mance [9]. Second, a green team allows students to gain practical experience by engaging and facilitating an environmental initiative. For example, students can assist with waste recovery efforts in a facility. This experimental activity allows students to see the processes and challenges of implementing and successfully executing an environmental initiative [30]. The third, and most advanced intervention, is a living laboratory. Students get hands-on, experimental learning opportunities to engage with current challenges to resolve environmental sustainability-related issues in sport in this experience [31]. In this real-life case study, students can take charge of a specific initiative to make a lasting change within a sport organization to pursue environmental sustainability initiatives.

Ultimately, the process structure of TSL lends well to close interaction between the instructor and student. The immersive nature of TSL offers opportunities for the instructor to convey passion and more contextual understanding as students become more engaged in the content. This is especially true for teaching emerging subjects like sport ecology [9] because TSL requires a creative way of thinking about human-environment interactions [32]. Further, it is essential for close interactions between instructor and student because the instructor needs to understand the student's inborn beliefs and behaviors to encourage unlearning and reconstructing their understanding of the interactions between people and the environment to create new knowledge [33]. This new knowledge will necessitate the flexibility and adaptability of curriculum and content to facilitate the exchange between instructor and student.

Challenges to curricular improvement result from underdeveloped feedback points throughout the academic term to modify the spot or more intensive changes in preparation for the course or module [34,35]. For example, discussions with students can help instructors modify their classroom management, design their in-class assignments, and adapt their final projects to be more personally relevant [34]. Further, Scott and colleagues [35] found that continuous student feedback was integral to reforming curriculum design and reform. They reported that this bidirectional feedback dramatically increased student satisfaction with the curriculum and faculty satisfaction with the learning environment. One such way to receive feedback is by engaging students through collaborative projects and mentoring. This study reports on such a student-instructor relationship through a collaborative reflection [35].

### 3. Methods

There is a scarcity of qualitative methodologies in sport management that vary from the standard for structured research, data collection, participant communication, evaluation of data, and presentation of results [14,36]. Specifically, alternative qualitative approaches are absent from sport management pedagogy research, such as collaborative reflections [35]. This method is missing from sport management pedagogy despite the notable progress in other academic disciplines [37,38]. Sport management pedagogy research benefits from the expanded use of alternative qualitative methods to advance the sport management academic discipline in practical and educational settings [14].

Collaborative reflections were created to advance professional development among peers in various settings—including nursing, education, and engineering. Potter [13] noted that collaborative networks foster an environment for constructive reflection, and feedback advances the professional development of those involved compared to those who self-isolate. The data generated from collaborative reflection lends well to transformative learning experiences (e.g., TSL) by creating a feedback loop between group members [27], especially instructor-student, mentor-mentee. Collaborative reflections also expose the participants to varying perspectives [39] that may be challenging but result in refined approaches to specific problems and subsequent solutions. Specifically, these varied perspectives are cultivated in an encouraging environment that is open to discussion [40]. This reflection is ultimately necessary for continued professional development and a reflective approach to inspire critical thinking [41]. Thus, this approach is valuable in professional development and higher-end and personalized educational settings. Within the context of

this study, a collective reflection approach was utilized to examine the influence TSL can have on a specialized graduate educational program focusing on integrating environmental sustainability into the sport industry.

The respective institutional review boards at the researchers' institutions determined that this research did not involve human subjects as defined by Department for Health and Human Services and Food and Drug Administration regulations.

### 3.1. Research Context and Procedure

In this case study, we utilized a reflective collaboration based on Glazer et al.'s [39] structure and process. Glazer and colleagues recommend that reflective collaborations range from small (e.g., two members) to larger teams (e.g., more than ten), and those members should:

1. Actively participate in group's conversations;
2. Be respectful and considerate to group members;
3. Maintain the confidentiality of the group's discussions;
4. Speak from your personal experience.

This methodological approach enabled the student and instructor (i.e., researchers) to reflect on individual and collective experiences as part of a year-long series of experiential learning assignments assessed from a TSL perspective. This format was applied to each student involved in the specialized academic program. However, for this study, one student chose to participate in this reflective collaboration. The female student was selected because of her willingness to participate in the research study and her direct involvement with a sport organization to practically apply the course concepts within the industry. The courses, corresponding lessons, and assignments were designed to develop and implement an environmental sustainability strategy into a partnering sport organization (e.g., collegiate athletic department).

### Intervention

Specifically, we collected data throughout the student's educational experience. Data were gathered from the student's experiences from her engagement with various sport industry stakeholders to integrate environmental sustainability into a college athletic department. Additional data were recorded from the researchers' weekly one-on-one conversations. Each week, the researchers had one-on-one discussions on the course content, ways the student could leverage TSL, and garner more support within the sport organization to advance environmental sustainability. The conversations took place over the phone due to the remote nature of the program. The discussions topics led to a productive collaborative relationship that enhanced roles and outcomes as a student and instructor.

After each week's phone conversation, the researchers reflected individually through notetaking. The following week's dialogue started with a discussion on the reflections from these notes, which addressed any lingering questions, concerns, or dilemmas after the period of reflection. The process continued for the entirety of the program. Upon completing the year-long assignment, both the student and instructor reflected upon their experiences. The heightened reflexive practice of reflective collaborations enhanced the student's professional preparation and improved the instructor's delivery of the curriculum's TSL.

### 3.2. Data Analysis

Data were gathered from the student and instructor's weekly meetings based on their reflections of conversational topics specific to coursework, assignments, and general professional orientation to advance environmental sustainability efforts within the sport sector. This shared direction between the researchers allows for a rich discussion to promote the foundational curriculum and corresponding experiential learning experiences to enhance student learning. Conversely, the student navigated the challenges of applying

these concepts in a practical setting and advancing the environmental efforts within a specific sport organization.

After completing the program, the researchers used a constant comparison method to explore the similarities and differences of the program's individual experiences as instructor and student [42]. As the researchers analyzed their past experiences and conversations through a series of hour-long phone conversations, they discussed, examined, and assessed varying viewpoints to establish authenticity and verify the emerging themes a priori with the themes outlined in TSL (i.e., engage, enact, enable).

### 3.3. Research Quality

Additional steps were taken to ensure the trustworthiness and credibility of the data presented in this study [43]. First, the researchers (i.e., student and instructor) provided their reflections but worked together to ensure trustworthiness and rigor through member checking. Data from these conversations and personal thoughts were then categorized based on these preset themes individually by the researcher and then verified together to member check and discussed any discrepancies [44]. That is to say that the researchers emphasized their interpretations as the role of instructor or student with feedback from their counterparts. This feedback is consistent with reflective collaborations to strengthen and advance one's skills within their role [39]. Second, the data were then coded using a priori content-specific categories [45] specific to TSL [10]—the head (i.e., engage), hands (i.e., enact), and heart (i.e., enable). These themes are discussed in the following section from the instructor and student's perspective in keeping with previous collaborative reflection research [5]. In the space below, the data are presented according to the tenets of TSL from the instructor and student's perspective.

## 4. Results

### 4.1. Head (Engage)

#### 4.1.1. Instructor

There is a growing research focus examining the bidirectional relationship between sport and the natural environment. Sport organizations also need to adapt to the changes in climate to stay relevant and financially viable. Still, sport managers must also be aware of and reduce the environmental impact of their organization. To address these emerging issues in the sport academy and best prepare a student for the problems they will confront in her future career, I developed a curriculum that focused on managing environmental efforts within the business of sport. Following trends in industry practice and trends among students to protect the natural environment, I believed the program would have broad appeal. Therefore, recruitment focused on students with sport management or environmental sustainability backgrounds.

The curriculum's intentional design covered foundational aspects to demonstrate to sport management students how to integrate environmental sustainability into the business of sport. Conversely, the curriculum-oriented students with environmental sustainability backgrounds to the business of sport. Thus, the program itself (instruction, assignments, and projects) bridged these two academic disciplines into one to enable future graduates to immediately and meaningfully advance the environmental movement within the sport sector.

These types of students were recruited because of their initial passion for sport and the natural environment. While formal education may focus on one discipline over the other (i.e., sport management vs. environmental sustainability), students were captivated and motivated to engage in the intellectual exercises of merging these two disciplines. This way, the students would have familiarity with one aspect of the curriculum and contribute to the broader classroom discussions. To this end, the program fully leveraged these passions and taught students to apply the course concepts through assignments and projects.

The curriculum was designed from scratch because no other academic programs and scant resources applied environmental sustainability concepts in the sport sector. There-

fore, when applicable, sport-specific research studies were used. However, most of the theoretical foundations used across the curriculum originated from industrial engineering, organizational behavior, marketing, policy, and economics informed a majority of the coursework.

The academic program was exclusively online. To address these challenges and ensure that the students had the proper foundation, I worked with our campus's online teaching academy and our Center for Teaching Excellence. These campus resources encouraged intentional reflections on the purpose of each aspect of the student experience to promote deep learning. Specifically, students drew upon experiences and related those experiences to course concepts. First, course lectures and discussions translated the theoretical frameworks, ideas, and research into practical applications that the students could later experiment with (or experience) in real-time by enacting them through smaller assignments. Then, larger course projects sought to advance the environmental sustainability culture and initiatives within a self-selected sport organization.

Throughout this process, direct feedback from the students was significant. The course's modality offered the opportunity to change the structure of assignments immediately, add/or delete content to make the course concepts relevant to the students, and engage with the specific course's core tenets. In addition, the online format required regular and meaningful conversations with the students, developed through regular phone calls and video chats. This close mentorship helped me develop these new courses to see gaps in the course content's progression or remove content that was irrelevant to its objectives. Her feedback was information that I never received from other classes or teaching feedback mechanisms (e.g., instructor evaluations).

#### 4.1.2. Student

A professor forwarded an email alerting me to Sustainable Sport Leadership Certificate at Seattle University. My heart leaped with excitement. Finally, was there an academic program out there that combined my love and my passion? Before receiving this email, I followed my passion for the sport by earning my sport management degree, found a passion for environmental sustainability, and pursued a LEED (Leadership in Energy and Environmental Design) Green Associate certification. However, I was having difficulty finding educational opportunities that provided knowledge and experience in sport ecology. So I immediately called Dr. McCullough (even though I was still a year from entering the program) to find more information. Dr. McCullough spent time explaining how he designed the course and why and the learning outcomes for the student.

Additionally, he spent time getting to know me and understanding my future goals in sport ecology. Finally, Dr. McCullough would check in to see how I was doing until I could apply for the program and offered his assistance in answering any questions I had about higher education programs. This initial interaction set a positive tone and foundation for relationship building and trust as I entered the program.

Looking back, as a newer student in this graduate program, I would have described myself as nervous and full of self-doubt, and I may have felt as if the practical requirements of the program may have been beyond my abilities. Yet, through my conversations with Dr. McCullough, I knew that he provided the tools to glean the necessary knowledge to succeed in the program. For example, each course offered ample class materials (i.e., lectures, readings, videos) needed to learn the necessary concepts and theories to succeed in the program.

The curriculum was provided in proper order so that a student could absorb and understand the essential materials. With my familiarity with sustainability and thirst for more knowledge, I quickly comprehended the concepts. To challenge and engage the students further, Dr. McCullough provided an abundance of additional resources for each course to expand the student's knowledge base further. The more materials shared with me, the more intrigued and engaged I became as I wanted to learn and absorb as much as possible. The program, which included formal (i.e., in-class readings, lectures,



discussions) and informal (i.e., conversations and mentoring) education components, was the foundation for the experiential aspect of engaging and working with a sport organization to make a positive impact on its environmental sustainability efforts.

Completing the formal educational components and frequent and consistent conversations with Dr. McCullough helped prepare me for the “personal and unique” practical application portion. In addition, Dr. McCullough was there to field all of my questions and mentor me throughout the entire work with my organization of choice. These practical experiences differed from the traditional question/answer format in a classroom instead of general or hypothetical questions.

Dr. McCullough was able to help me navigate my way through the program by discussing the issues which were exclusive to the organization for which I consulted. In addition, we discussed what challenges I might face as I guided my way through the new experience of working with an organization. Topics included my plans for each TSL component, the progress of the programs, breakthroughs, obstacles of working with departments that were not of the ecocentric mindset in operations, my epiphanies, and various concerns. Through each of these conversations, the relationship between professor and student became more assertive with a greater trust, which allowed for more engaged and heightened conversations between us because I was now comfortable asking questions that I may not have asked in the classroom.

#### 4.2. *Hands (Enact)*

##### 4.2.1. Instructor

Course assignments and projects helped students connect these concepts to practical applications. The overarching project was to address environmental sustainability issues within a sport organization identified by the student. The student essentially served as a consultant to provide evidence-based consultancy to resolve self- or organizational identified issues concerning environmental sustainability efforts specific to the course content. Designing the projects in such a way allowed for flexibility depending on the degree to which their respective sport organizations engaged in environmental sustainability. Some sport organizations have deep environmental commitments but need improvement in some areas (e.g., fan engagement, organizational culture, formal policies), while others have no initiatives.

These state of the organization’s environmental sustainability efforts were the focus of the instructor-student weekly phone conversations. During these conversations, I assisted the student with the various difficulties she confronted that week to advance the sustainability initiatives or get deeper buy-in from her contacts within her targeted sport organization. I would remind the student of course concepts from the current or previous courses at play in a given instance or discuss theoretical concepts’ limitations in practical settings. Through these conversations, it became apparent how a student could think more abstractly and apply course concepts to achieve specific objectives related to the assignments while helping their respective organizations. As the student’s knowledge deepened, I spoke less and listened more during our conversations. It was clear that she gained more confidence in processing information from the course content and her practical experiences to find a solution independently. She would use me as a sounding board to talk through her decision-making processes, which became more efficient and streamlined as she progressed through the program.

##### 4.2.2. Student

Throughout the program, I worked with multiple departments at the educational institution. Each TSL assignment within the program allowed me to work with various athletics departments and those associated with athletics. I met and built relationships with the faculty and staff in the sustainability office, the athletic department, facilities and maintenance, and the university’s sport management department. During this time, I also gathered information about the current sustainable state, including values and

norms of environmental sustainability around the university but with significant emphasis on the athletic department. The fact-finding portion of the process was extraordinarily enlightening. While the program's formal educational components provided me the foundation to work competently in the field, it was not until I was experiencing these concepts and ideas in a practical setting that I fully understood the magnitude of the challenges to overcome to bring sustainable thinking into athletics. I began to comprehend the obstacles that the sustainability office faced in trying to "break into" the athletic department due to the daily challenges the athletic director dealt with. It appeared that the situation was one big stalemate. I specifically remember there being a time when my conversations with Dr. McCullough were more critical than ever. I found myself becoming emotionally vested in the situation at the university. I needed his guidance in overcoming the barriers before me. I began to brainstorm ideas to help two departments reach a mutually agreed-upon sustainability goal when they looked at environmental sustainability from a different perspective, anthropogenic versus ecocentric.

While the sustainability office has the job of making the entire campus as sustainable as possible, the athletic department's task was to win as many games as possible while staying within budget. The athletic department was operating with an anthropocentrism management style. Interestingly, the athletic director understood the importance of environmental sustainability in athletics, but he did not have the resources to make sustainability a priority. So, the athletic director was supportive of the sustainability office efforts in athletics. Once I understood each stakeholder's perspective and resource constraints, I started thinking about a solution to bridge the gaps between them. I can honestly say that the sustainable ideas might not have emerged if I did not have the educational foundation in the classroom setting, followed by the "boots on the ground" presence.

I was able to connect the sustainability office to various stakeholders within the athletic department. A meeting ensued between all parties, the first big step toward a more sustainable, ecocentric future. In addition, I facilitated an introduction between the sustainability office and an alum who raised bees and wanted to bring them to campus in the gardens. This project's culmination and what I am most proud of was creating a sport ecology apprenticeship position. In a collaboration between the sport management department, the office of sustainability, and athletics, I engineered an apprenticeship program for sport management students to work with the recycling director to help with sustainability projects in the athletic department. This project supplied a required degree component while allowing future sport professionals to gain valuable knowledge and experience to take to future positions. Additionally, it provided athletics and the sustainability office with additional resources to implement more sustainable initiatives.

These ideas and ensuing actions would not have been possible for the program's careful design and mentoring of Dr. McCullough. Specifically, while reflecting on the practical, sustainable accomplishments during the program, I realize they may not have been possible without the consistent conversations between myself and Dr. McCullough. During these conversations, mentoring was the main factor of my success because it enabled me to brainstorm with Dr. McCullough as I worked through the program's various stages. In addition, the immediate feedback was invaluable to me as I navigated through my organization's sustainable roadblocks.

#### 4.3. Heart (Enable)

##### 4.3.1. Instructor

The sport ecology-focused course was intended for a diverse pool of prospective students, mainly those with a sport or environmental sustainability or studies background. This recruiting strategy intentionally attracted students passionate about the two content areas (sport and ecological sustainability) bridged through the curriculum. The curriculum enabled students to use those passions by using course content to teach how to use tools (i.e., head) to engage the sport industry in a practical and meaningful way (hand). Through this process and often through the student's challenges in her practical experience, her

passion (i.e., heart) became further enabled. At the program's start, the student's ecological passions may have been more ideological than practical to encourage meaningful change.

This is not to say that her *romanticized* views were unattainable, but rather the student lacked the context and valuable tools to achieve her goals. The experience throughout the program (e.g., 12 months) increased her confidence in each conversation. You could see the impact and change in her reflection assignments and her progression towards the final project. It was clear that the student experienced a transformation that converted her passions into purpose.

The built-in aspect of one-on-one conversations helped refine and advance the content delivery and, in turn, deepened student learning and propelled her quality of work. Subsequent cohorts saw her peers' achievements. This baseline understanding of the course content applications in practical settings increased the student's quality of work and the creativity to embark on new initiatives within sport ecology. The feedback and examples served as proofs of concept that the educational process worked, albeit with ongoing and proactive modifications to improve the learning experience and its direct applications to industry practice.

#### 4.3.2. Student

Before entering and completing the course, I pursued my love and passion for sport and environmental sustainability. However, I treated them as two, separate entities and I was aimlessly trying to figure out how to merge them. This program allowed me to learn about sport ecology as a unique genre far greater than the sum of its parts. Additionally, it allowed me to learn about the concepts and theories applied to sport ecology and how they differ from traditional sport management applications.

Moreover, the mentoring and personalized conversations allowed me to understand the knowledge I had learned in the classroom setting through the practical application and experience working with a sport organization. This program's experience transformed me into a more confident individual and opened my eyes to the reality of sport organizations' sustainable situation. I could not have fully understood this with only a textbook. Additionally, I realized that achieving positive, sustainable change within an organization takes more than just passion. It also takes knowledge, understanding an organization's view of sustainability (ecocentric or anthropocentric), perseverance, and determination to make positive change. The mentoring and TSL components were necessary to help me achieve this realization and a deeper understanding of the concepts and my future role in sustainable athletics.

In retrospect, I am proud of what I could accomplish in this program because I made a difference. I graduated from the program with an increased opinion of my abilities and confidence that I did not have before I started. The experience was invaluable, and it had transformed me personally. I had always been a good student, but I never left a class with a feeling of accomplishment like I did after this program. Instead, after this program, I went with a sense of empowerment to pursue my passion in either industry or academia.

I wish I had more opportunities for these experiences throughout my undergraduate sport management degree. Many of my classes touched upon sustainability in the classroom. Still, it was the experience of "doing" to see my actions' impact on the environment and gaining practical that I can now share with others. TSL had the most significant impact on me as a student. As I transition into my role as a teacher, I will aim to incorporate as many TSL opportunities as possible into my classroom. The knowledge and tools I acquired during my time as a student in this program continue to influence me today in all aspects of my life positively.

## 5. Discussion

### 5.1. Collaborative Reflection as an Educational Tool

The process of collaborative reflection was new to both researchers in this study. However, this approach complements the instructor-student relationship well—especially

in specialized content programs [5]. Both the student and instructor benefitted from their weekly feedback conversations. That is, the student and instructor noted that trust deepened through their discussions and allowed for richer conversations about strategies and a willingness to be vulnerable to ask questions that they may not otherwise ask in a formal classroom setting. This deep trust advances the student and instructor's professional development, whether preparing for a professional career in sport or becoming a better educator [27]. For example, a student may be hesitant to ask specific questions. From an instructor's perspective, the relationship between student and instructor would improve if the student knew that the instructor was deeply invested in her educational development. The open and regular dialogue allowed the student to delve into more granular topics that helped refine her learning given the nuanced contexts she encountered with her sport organization.

The instructor conveyed the course's objectives and accepted constructive criticisms to improve the class. The instructor also benefited by adjusting and aligning assignments to the individual student's learning needs and career aspirations by providing support (e.g., additional content) to enhance the student's learning based on her responses to question the effectiveness of curricular activities or modules. Specifically, the student reflected on the benefits of TSL throughout her educational process. The collaborative reflection was critical before the student started the capstone project to build her confidence to implement environmental initiatives within the organization.

Her confidence and fresh perspective from these reflective conversations were welcomed by the various stakeholders associated with the athletic department, which shaped new relationships and a platform for positive, sustainable change. The student reported a profound sense of accomplishment, personal growth, and a renewed vitality for learning due to the transformative learning opportunity and the unique relationship between her and the instructor [46,47]. The instructor focused on creating a deep connection with the student to facilitate a better educational experience. The collaborative reflection helped the instructor understand the student's background based on immediate and regular feedback throughout her educational experience. Moreover, the connection with the student informed the instructor on how to best mentor and advise the student through the challenges of working on a client-directed TSL experience.

### 5.2. TSL and Collaborative Reflection

Reflection is a significant component of an instructor's teaching philosophy. For example, this approach concentrates and encourages a student to reflect on her past experiences, new material learned during the term, and various aspects of prior perceptions that were 'unlearned' due to the course [27]. These results are not fully addressed in Orr et al.'s [9] application of TSL to sport courses. However, it should be noted, and the point stressed, that the educational process of unlearning is critical to a TSL pedagogical approach. Critical reflection and encouraging students to understand the epistemology of her sport and environmental sustainability knowledge and unpack those rationalizations is essential to cultivate critical thinking skills. This collective reflection highlighted that TSL enriched the theoretical understanding of the concepts and processes related to integrating sustainability in an applied context (i.e., collegiate athletic department). While the results from this study are not generalizable and are limited to the perspectives and interactions between the instructor and student, instructors may benefit from these findings to use them in their courses or sport ecology courses.

Nevertheless, the TSL experience for the student resulted in tangible outcomes that benefitted the sport organization, as exemplified here [10]. This student's work produced a substantial environmental sustainability strategy, two funded internships for students, and a case study [31]. The student conveyed a sense of accomplishment when the course concepts were successfully and practically implemented into the athletic department's operations. She demonstrated her knowledge by resolving the department's sustainability

issue rather than simply testing her knowledge in an exam or mastering theoretical frames in a paper or hypothetical proposal.

Moreover, building off the benefits of TSL, as highlighted by Orr et al. [9], an ambassador network can develop because of students' impact on the industry because of their immersive educational experience. Students who are positively impacted through TSL and become empowered to promote social change in and through sport organizations can then influence others to deeply integrate these values within individual organizations and across the sport sector. In this instance, the student created a program that will have an immediate and sustained impact because of her involvement with the athletic department. That will then impact subsequent students involved in her established internships focused on advancing environmental sustainability in the athletic department.

Overall, this process conveys the importance of TSL and engages students' heads, hearts, and hands [10]. Throughout the curriculum, the student was able to apply for their work with a sport organization immediately. Implementing these concepts and new environmental initiatives validate the student's abilities and the value of their educational foundations. The confirmation increased the student's confidence consistent with other TSL literature [5,9,10]. In addition, the student's validation deepened her passion for sport and the natural environment by seeing that sport organizations can engage in meaningful change and improve their environmental performance [9].

### 5.3. Practical Applications

The qualitative approach of this student in our data collection (i.e., collective reflection) and analysis limit the generalizability of these findings to the context of this study and academic program. However, there are takeaways that instructors can glean and implement within their courses. This implementation should be done with caution, knowing that the outcomes may vary from the experiences and results presented in this study.

TSL allowed the instructor to gain valuable insights from all students on their experiences as they worked with various sport organizations to launch or enhance their environmental sustainability initiatives. As mentioned in the previous section, the instructor improved his mentor students by working with sport organizations. However, the instructor also learned how to apply and enhance the ever-developing course content in this area. This reflection will lead to the improvement of the curricula at this institution. This gap was able to be bridged more rapidly because of the feedback loops integrated into the curriculum.

Adjustments were made more quickly to tailor assignments and equip students with the knowledge to combat challenges they encountered with their sport organization to implement environmental sustainability initiatives. The feedback loop also enhanced the lessons and discussions that the instructor could have with other students. It provided opportunities for students to connect to present personal challenges and crowdsource solutions from others in the class. This created a strong network among the students as a result of such discussions.

Moreover, the instructor-student conversations and the nature of the TSL course design allowed for the quick adaptation of assignments to the individual student's needs and circumstances. These modifications could align with the student's learning style, whether audio, visual, or kinesthetic learners [25]. This adaptation helped the instructor and student find mutually agreeable ways to fulfill the course requirements and ensured that the individual student was engaged in content to be an active participant in the educational process rather than a passive learner.

Further, these insights give credence to the identified gaps that sport practitioners have with the natural environment resulting in inaction [17]. The concepts and application of ecocentric management techniques [18] taught throughout the curriculum bridged this gap. However, these concepts can be stronger emphasized in the curriculum to increase student confidence. While the generalizability of this data is limited to this program, sport management educators can use this information to design their sport ecology courses.

Additionally, teaching sport management students about climate change, how it will impact the sport industry [30,48], and how the sector contributes to and addresses climate change to differentiate sport management students from others without TSL experiences. This differentiation creates a competitive advantage over other applicants for internships and full-time employment opportunities. That is, sport management programs should teach the past and current trends in the industry, but as instructors, we should prepare our students for emerging and future issues within the sport industry.

## 6. Conclusions

From this examination, we discussed three areas of value to sport education. First, the qualitative approach used in this study builds upon the calls from Edwards [35] to use collaborative reflection methods to reflect upon our interactions with students to advance learning. Instructors can use this case as a basis to determine whether or not this approach can be helpful in their classrooms to promote understanding and to encourage deeper reflection and acclimate students to direct feedback from the instructor and their peers.

To that end, the second benefit we discussed was the value and importance of collaborative reflections of TSL from both a student and instructor's perspective and advance our understanding of integrating environmental sustainability into sport management lesson plans, courses, and curricula [5]. Students may not fully grasp how to navigate the industry or workplace to advance specific tasks or projects. Reflective collaborations can help provide immediate feedback that the student can implement into their immersive projects.

Third, the collaborative reflection of this transformative sustainability learning exercise can build upon previous research, exploring the process of designing more robust courses to advance environmental sustainability in sport disciplines. As the sport academy continues to mature and refine itself to address current issues and industry practices, this research line can enhance teaching pedagogies, in general, to advance student learning and content-specific courses like sustainable development and sport ecology, specifically. Through this process, instructors should be encouraged and embrace collaborative reflection. This experience may prove more fruitful and valuable at improving one's course and instruction methods than data from student evaluations or peer evaluations. We recommend future research should examine how collaborative reflection can be incorporated and enhance teaching pedagogies and learning processes. Moreover, researchers can study the change in environmental attitudes and the students' confidence to confront such issues in the students' current and future careers.

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Article

# Building Teacher Identity in Environmental and Sustainability Education: The Perspectives of Preservice Secondary School Geography Teachers

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**Abstract:** Geography teachers have an important role within environmental education and, in England, are developing their professional identities at a time when environmental education is contested. This study considers the experiences of five trainee secondary school geography teachers who are all part of a university-based teacher education programme rooted in an environmental justice approach. Data is drawn from three interviews with each of five individuals over the course of their training (15 interviews in total) and participants' written reflections. Findings include (1) teachers draw on a range of approaches to implement Environmental and Sustainability Education (ESE), (2) teachers share and value their own and their students' stories of and personal connections with the environment and (3) teachers seek to enable young people to bring about change to their lives and communities. The contested nature of foregrounding ESE in the geography classroom is noted, as are the tensions and emotional load that teachers experience when seeking to develop their professional identity. Reflections are shared regarding the ways in which PGCE programmes provide teachers with opportunities to build ESE identities, in particular the role of semi-structured, reflexive interviews in providing an important space for identity work that could be usefully considered within the broader context of the newly implemented Early Career Teacher framework for England.

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**Keywords:** geography teacher; teacher identity; Environmental and Sustainability Education (ESE); secondary schools; Initial Teacher Education (ITE)

## 1. Introduction

Over recent years, young people across the world have been at the forefront of movements calling for climate justice and climate education including Fridays for Future and Teach the Future. Such movements have highlighted the inadequate provision of current Environmental and Sustainability Education (ESE) in all phases across the UK [1] and this is supported by research. For example, Rousell and Cutter-Mackenzie-Knowles [2] highlight that didactic approaches to climate change education for children and young people have been broadly ineffective in shaping students' beliefs and attitudes. Instead, Rousell and Cutter-Mackenzie-Knowles [2] call for educators to use participatory, interdisciplinary, creative, and affect-driven approaches when responding to the ethical, political, scientific and social complexities of climate change through education. In a review of environmental education policy in England, Glackin and King [3] highlight the limited and patchy coverage of the environment in national-level education policy and assessment specifications, with the environment largely restricted to science and geography, and the latter subject optional for students post-14 years. Furthermore, Glackin and King [3] found that where the environment is present, the focus is on education about or in the environment, rather than a holistic approach that includes education for the environment. This is troubling as although there is an overwhelming scientific consensus on the reality of anthropogenic climate change, in England, climate change education is persistently peripheral. It is in this challenging and contradictory context that trainee teachers are practicing and learning to become teach-

ers. Therefore, a greater understanding of the ways in which trainee teachers build their identities in the context of ESE is timely and important. Furthermore, as previous studies have underlined the importance of the training year in developing teachers' professional identity [4] and while environmental education (in England) is largely restricted to science and geography, it is teachers of these subjects that might usefully be the initial focus of further research. To date, studies that consider the identity development of teachers in the context of ESE are predominantly focused on science teachers based in the US. Situated in England, this research explores how trainee geography teachers develop their identities as ESE teachers in the context of a university-based postgraduate programme (Postgraduate Certificate in Education, PGCE) that foregrounds an environmental justice approach. This research is guided by the following questions:

- What challenges and opportunities do secondary school trainee geography teachers experience in the context of ESE?
- How do trainee secondary school geography teachers develop their professional identities in the context of ESE?

To begin, I consider teacher identity development in the context of ESE. I then outline the institutional context of a PGCE programme that is grounded in an environmental justice approach before touching upon the particular pandemic-related challenges that trainee teachers on this and other programmes have encountered during the period of this research (2020–2021). Next, I outline the materials, methods and analytical framework for examining trainee geography teacher identity development in the context of ESE. I then present my analysis and share the varied and contested nature of ESE in the secondary geography classroom. Finally, through discussions of these findings and related literature, I reflect on what these findings may indicate for future policy focused on teacher education and ESE more broadly in England.

### *1.1. Teacher Identity and Environmental and Sustainability Education*

Research that considers the professional development of those training to become teachers, and those who are newly and recently qualified has regularly highlighted the need for understanding of teacher identity more frequently to inform teacher education and programmes of continuing professional development [4–6]. Some recent research [7,8] has highlighted how the strength and depth of secondary school geography teachers' subject identity, or their 'subject story', provides teachers with support during periods of change and reform in their professional practice. Other researchers have noted how during the training and first few years of their career, secondary school teachers' identities are closely linked to their subject and that their identity as a teacher develops over a longer period [9,10]. Relatedly, researchers have recently begun to explore the ways in which the social identity approach may provide insights as to the collaborative nature of professional identity development in educational contexts [4,11–13].

As part of a systematic review of 79 theoretical and/or empirical research items that consider identity in the context of secondary school science teachers, Rushton and Reiss [4] have shown how the social identity approach (re)affirms the importance of groups and social context in the identity development of teachers and that shared identity and group membership play an important role in an individual's ability to develop and sustain positive professional identities. The social identity approach understands professional identity as a social identity, where an individual does not simply attain 'Qualified Teacher Status', but instead develops a professional identity so that they become a teacher. Rushton and Reiss [4] argue that the social identity approach provides education researchers and teacher educators with a greater understanding of how and why some teachers form positive professional identities, whilst others do not. This is of relevance when considering the identity development of teachers who engage in ESE as research has shown that teachers who teach aspects of ESE such as global warming and climate change frequently experience periods of challenge and tension that increase, rather than decrease, over time [14,15]. In a study of 64 trainee secondary school teachers, based in the USA, who

taught about global warming as part of ESE-informed project, Pedretti et al. [14] observed that teachers were initially confident and highly motivated at the outset. However, at the close of the programme, teachers reported that they would be less likely to continue with these approaches in the future due to the tensions and challenges that they experienced in their practice. Pedretti et al. [14] identified these tensions as being linked to: support and belonging; control and autonomy; expertise and negotiating the curricula; politicisation; biases and ideological foci. Pedretti et al. [14] suggest that these tensions are caused by the nascent development of the trainee teachers' professional identities which meant that it was more challenging to teach topics such as global warming and more difficult to teach science using ESE-informed approaches which are perceived by some as alternative or different to usual practice. These tensions and difficulties are also found in a more recent study of US-based high school science teachers who taught climate change using ESE-informed approaches [15]. This study of 15 teachers from rural, urban and suburban contexts in the US included ten who had been qualified for at least six years and so could be described as 'experienced' teachers [15]. Drewes [15] found that both novice and experienced teachers relied upon their agency as teachers that was rooted in their classroom practice to overcome periods of challenge and tension. ESE curricula frequently include complex and controversial topics and Enyedy et al. [16] have suggested that teachers' identities are especially likely to inform practice when teaching these aspects of the curriculum. Enyedy et al. [16] also highlight the importance of teachers drawing on different sources of identity to enable them to adapt and endure during periods of professional challenge and that teachers need explicit guidance regarding the concept of identity formation and how this interlinks with practice. These examples are all drawn from the US and research with secondary school science teachers [14–16]. However, I contend that the observations of tension, challenge and difficulty experienced by these teachers in their practice when enacting ESE-informed curricula and approaches are highly relevant to this study which considers trainee secondary geography teachers' identity development in relation their ESE-informed practice in England. For example, competing tensions of what constitutes 'normal' or 'usual' practice when teaching global warming and climate change as part of science is just as relevant to the geography classroom where in England debate continues as to the place and purpose of environmental education in the context of formal schooling [3].

### *1.2. Institutional Context: The Post-Graduate Certificate in Education, Secondary Geography Programme at King's College London*

Each year, approximately 180–200 people complete the Post-Graduate Certificate in Education programme at King's College London, qualifying as secondary school teachers in subjects including Computing, English, Mathematics, Modern Foreign Languages (MFL), Science, and Religious Education. In September 2020, a cohort of 18 students joined the inaugural PGCE secondary geography programme, led by the author, who was appointed in January 2020 to develop, write and lead the course as its first Subject Director. As a former secondary school geography teacher and academic with expertise in environmental geography [17,18] and teacher education [4,13], I brought a range of experiences and perspectives when considering how to develop the PGCE geography curriculum. At the centre of this was an explicit intention to develop a programme that would foreground the concept of 'environmental justice' as a way of supporting trainee secondary geography teachers to engage in ESE and to develop their identity as a teacher of ESE. In doing so, I drew on the theorisation of environmental justice in the context of climate change as conceptualised by Schlosberg [19]. Schlosberg argues that climate change and notions of climate justice have reframed environmental justice beyond a focus on the inequitable distribution of environmental risk, to a theorisation which recognises that the environment and nature are core to providing the conditions for social justice. That is to say, rather than, for example, access to clean water, air and secure food supply being understood as a facet of social justice, equitable access to the environment is integral to the establishment of justice for all [19].

In his theorisations of environmental justice, Schlosberg [19] draws on the capabilities approach [20,21] as a way of understanding social justice and examining what capabilities (or opportunities, or capacities) different groups have for engaging in action that can lead to the enactment of environmental justice [22,23]. The capabilities approach has moved into geography curricula in both higher education [24] and secondary school settings [25–27] and has been described as ‘geocapabilities’. In the context of higher education, Walkington et al. [24] identify five geocapabilities that geography higher education programmes develop in students including: ‘use of the geographical imagination; ethical subjecthood with respect to the impacts of geographical processes; integrative thinking about society–environment relationships; spatial thinking; and the structured exploration of places’ (p. 7). Lambert et al. [27] have articulated geocapabilities more broadly through three questions which consider the extent to which geography can:

- Promote individual autonomy and freedom and the ability of children to use their imagination and to be able to think and reason.
- Help young people identify and exercise their choices in how to live, based on worthwhile distinctions with regard to their citizenship and to sustainability.
- Contribute to understanding one’s potential as a creative and productive citizen in the context of the global economy and culture [27] (p. 729).

These ideas of geographical imagination, ethics and choice are found across the articulations of geocapabilities in both the school and higher education settings. Higher education, as documented by Walkington et al. [24], has an emphasis on spatial thinking and exploration of place whilst school context (e.g., [27]) has a focus on citizenship. This is perhaps not surprising given the different foci of geography curricula in these two phases of education. Importantly, a PGCE geography programme traverses the spaces of higher education and the school classroom. Trainee geography teachers have completed an undergraduate programme in geography or a closely related discipline and, as part of the PGCE, develop their classroom practice whilst continuing to engage in an academic course of study at the Masters’ level. In this way, PGCE programmes have an important role in providing a bridge between these spaces of teaching and learning, where trainee teachers are themselves engaged in a course of higher education whilst simultaneously practising in secondary school classrooms. Therefore, the use of the geocapabilities approach to provide an understanding of the ways in which environmental justice can underpin geographical teaching and learning in both the secondary school and university settings is especially relevant. With this in mind, I briefly share what an environmental justice - informed PGCE in secondary geography looks like at this early stage of thinking and implementation.

The programme handbook provides this overview of the foci of university-based subject sessions:

‘We will explore ways to help students understand the relationships between society and nature, over time. In this, we hope to support young people to navigate complex issues such as climate change, food security, the destruction of biomes, ‘natural’ hazards and rapid urbanisation. Encouraging students to ask geographical questions is at the heart of our approach to teaching and learning in Geography.’ Ref. [28] (p. 3)

This statement foregrounds both the importance of asking geographical questions and understanding the relationships between society and nature, which is consistent with the geocapabilities approach. Furthermore, the programme is grounded in an enquiry approach to learning geography that has been extensively developed by Margaret Roberts [29] and advocated by the Geographical Association as providing high-quality teaching in secondary geography [30]. Roberts [29] describes how enquiry is an approach to teaching and learning that is driven by asking questions, rooted in sources of geographical evidence that include the knowledge and ideas that students bring to the classroom, i.e., their own geographies. An enquiry approach requires the student to think geographically (e.g., to

reason, to analyse, to evaluate) and be reflective. This enquiry approach underpins the two key aims of the PGCE geography programme [28] (p.11):

- To equip geography teachers to implement an enquiry approach to learning disciplinary knowledge, which enables young people to develop a critical understanding of the world.
- To support geography teachers to develop curricula that enable young people to recognise and understand the multi-dimensional nature of the relationship between people and society, so that they develop critical environmental awareness.

In response to these two key aims, the PGCE geography programme is structured around seven themes: (1) Learning Geography, (2) Teaching Geography, (3) Curriculum, (4) Assessment, (5) Fieldwork and Beyond the Classroom, (6) Subject Knowledge Development, and (7) Environmental Justice. Each of these seven themes is elucidated through a series of questions and those identified for the Environmental Justice theme are as follows [28] (p.13):

- What is an environmental justice approach to geography education and why does it matter?
- How can geography contribute to learners' engagement with and understanding of controversial issues?
- How can geography provide a context for values education?
- How can geography contribute to citizenship education?
- What are the appropriate strategies and resources to teach about sustainability?
- What contribution can geography make to learning across the curriculum to promote learners' moral, social, and cultural development?
- How can we identify our own beliefs related to environmental justice to support the development of our teaching practice?

Drawing on the enquiry approach, these aspects of environmental justice are intentionally framed as questions so that the teacher educator and trainee teacher together seek to make sense of the ways in which teaching and learning in geography can be the work of environmental justice. Throughout the PGCE programme, an enquiry approach is encouraged by fostering an open-ended, generative style of learning. Trainees are encouraged to respond to questions, provocations and different environments (including online and classroom spaces of learning and fieldtrips) in a manner where there is no single way of doing or being. Instead, I aim to promote teachers' own agency and freedom, an ethos of going beyond the rigidity of knowledge, in favour of the experimental. This is an approach that enables teachers to combine ideas and put them to the test in an iterative process by thinking about and reflecting upon how they make a difference to the particular children they teach. Environmental justice is as an ethos as much as a set of practices as articulated in the KCL PGCE geography programme. It is about recognising that teaching is not simply about conveying knowledge, but that the areas of knowledge that teacher choose or choose not to incorporate matter. The ethos of environmental justice provides teachers with the freedom to use their own skills, training and education to think through what matters for the lives of the children they teach. What skills and knowledge do teachers need to be able to engage with, understand and use to achieve the 'valuable beings and doings' espoused by Sen [31]? (see also [32]). Through an ethos of environmental justice, trainee teachers understand that the answer to this question is neither singular nor universal. Environmental justice is about teachers being sensitive to the contexts in which they teach, bringing together new academic concepts from geography (for example, inequality, intersectionality, or risk) that will offer children positive ways of navigating their environments that give them the agency and freedom to question and imagine more equitable futures for their own flourishing. This approach seeks to make environmental justice integral to teaching and learning in geography, not simply an (optional) facet in the same way that the environment is not a facet of justice, but an ineradicable part of achieving a just and equitable world.

### 1.3. Training to Become a Teacher in a Time of Global Pandemic

One predominant aspect of life in the period 2020–2021 has been the global COVID-19 pandemic. This pandemic has had a significant impact on the education sector in both school and university settings in the UK and beyond [33]. Training to become a teacher is widely recognised as a challenging undertaking in any year [34]. However, those who embarked upon PGCE course during the academic years 2019–2020 and 2020–2021 faced a particular set of challenges brought by the COVID-19 pandemic [33]. In the UK, this has meant widespread school closures in March–July 2020 followed by periods of variable disruption (including almost complete closures of schools) from September 2020 onwards. Even in the period March–July 2020, most schools (in England) remained open for children of key workers and vulnerable children. Rushton and Nayeri [35] have noted both the broad and subject-specific challenges that trainee geography teachers have encountered during the academic year 2020–2021. More generally applicable challenges across PGCE students teaching different subjects have included the varied ways schools have changed their teaching practices and the requirements placed upon teachers in order to become ‘COVID secure’ (e.g., school and classroom zoning and pupil and staff ‘bubbles’) and the many changes to ITE provision (e.g., shift to predominantly online delivery including remote school visits). The impact of frequent disruptions caused by repeated periods of self-isolation for pre-service teachers, mentors and school students and the reduction in numbers of school placements also posed significant challenges for PGCE students more generally [35]. Subject-specific challenges that geography PGCE students have experienced included limited opportunities to undertake fieldwork and learning in educational settings beyond the classroom (e.g., museums) due to the cancellation or postponement of fieldwork and trips during their school placements. PGCE geography students have also had limited opportunities to work with all aspects of the geography curriculum for example, COVID-19 has restricted schools’ ability to carry out the A-level geography Non-Examined Assessment (NEA) element of the course [35].

Rushton and Nayeri [35] also note that for PGCE geography students training in the period 2020–2021, the value of geography as a subject was frequently reaffirmed and underlined. Geography as a discipline was a key part of understanding the spatial context of the spread of COVID-19. For example, the ways in which this information was communicated through maps, graphs and charts during the regular public briefings made by politicians and scientific and clinical experts to the public on television and through social media. Furthermore, geographical knowledge and understanding of the ways in which concepts such as inequalities, sustainability and risk is crucial to better help young people make sense of their own experiences and geographies in a time of global pandemic. This disciplinary knowledge enabled trainee geography teachers to both support the children and young people they taught to develop their geographical knowledge and understanding but also to help pupils navigate the uncertain and disruptive experience of living and learning through COVID-19 [35]. I argue that this is consistent with the ethos of environmental justice, where teachers foreground the knowledge and ideas that matter to the children they teach and where children’s own geographies are valuable sources of knowing and being.

Further work, that is beyond the scope of this article, is needed to understand the experiences of those who undertook a PGCE during this turbulent period in education. This work could helpfully consider how trainees have or have not been able to develop positive professional identities during this period and consider what continuities and changes this might mean for the ITE sector as a whole. Relatedly, the specific needs of subject-specialist teachers who trained during this period might also be considered so that this aspect of teachers’ professional lives and work can be fully enabled in the long term. Such research could respond to both alleviate current challenges posed to teacher professional development by the pandemic and ensure better preparedness for future extreme events.

## 2. Materials and Methods

Here the data collection methods and participants are described before outlining the analytical process used in this study. The research was approved by the researcher's university Ethics Committee on 6 August 2020.

### 2.1. Data Collection

Data has been derived from two sources: (1) semi-structured interviews with five participants and (2) written reflections from the same five participants. Interview schedules and prompts for written reflections were developed during September 2020. Interviews, each lasting approximately 40–50 minutes, were completed with each participant at three points during the 2020–2021 academic year: October 2020, January 2021 and April 2021. The foci of each interview and questions asked are set out in Table 1.

**Table 1.** Overview of questions included in each of the three interviews.

Interview	Foci and Indicative Questions
(1) early-October 2020	<i>Background/context</i>
	Why did you decide to become a teacher now?
	Why did you choose the PGCE route?
	At this point in the PGCE, how would you describe the role/work of a teacher?
	<i>Experiences to date</i>
	Can you describe your experiences in the first few weeks/months of the PGCE course?
	How would you describe a teacher?
	What is the role of a teacher in the classroom? In the wider community/society?
	<i>Role/place of the subject of geography</i>
	Can you tell me about your ideas around your subject?
	What contribution can geography make to young people? The world?
	Have your ideas about geography changed as you have got into the PGCE? Do you think the PGCE (so far) has had an impact on how you perceive geography?
	<i>Place of identity</i>
Do you think your experience of training to be teacher (so far) has changed how you see yourself?	
Do you think your experiences (so far) have changed how other family and friends see you? Do you talk about your work outside of university/ school placement?	
Can you describe what sort of teacher do you want to be?	
What values do you have?	
Can you share what you think is the purpose of education?	
Can you describe how the work you do reflects your values and ideals?	
(2) late-January 2021	<i>Experiences to date</i>
	Can you tell me about your experiences of the PGCE course since we last spoke?
	Can you tell me about how COVID-19 has shaped your experiences of the PGCE since we last spoke?
	Have your ideas about the role of a teacher changed or developed?
	<i>Role of the subject of geography</i>
	Have your ideas about geography change or developed?
	Can you tell me about how you have approached concepts such as sustainability in your classroom practice?
	What ideas and experiences do you bring to your teaching of geography in the classroom?
	<i>Place of identity</i>
	Has your experience of the PGCE (so far) changed how you see yourself? Do you think your experiences (so far) have changed how other family and friends see you?
Can you describe what sort of teacher do you want to be?	
Can you share what you think is the purpose of education?	
Can you describe how the work you do reflects your values and ideals?	
(3) April 2021	<i>Questions asked in addition to those outlined for Interview (2)</i>
	What are your plans and ideas for your future career?
	How prepared do you feel for your NQT year?
	What additional support and/or guidance would you like to receive during your NQT year?
	What key ideas and/or experiences from your PGCE will you take forward?



Prior to the first and second interview, participants were asked to complete a 500–1000 word reflection. The first reflection was in response to the prompt, ‘My school experience’, where participants were encouraged to reflect upon their prior experiences of school including their own education and any work or training in a school setting for example, teaching English abroad or working as a teaching assistant in formal informal school settings. The second reflection was in response to the prompt, ‘Looking back, looking forwards’, and participants were given the opportunity to reflect on their experience of school as part of the first placement and look ahead to the second placement and consider challenges, opportunities and areas for further development. As part of preparation for each interview, I read through the relevant reflections and prior transcripts to ensure that the questions I asked were open enough to encourage reflection but also reflected the thoughts and ideas participants had previously shared. At the outset of the interview, issues around anonymity and confidentiality were discussed with participants (participant contributions are shared in this research using pseudonyms). Key information about each of the five participants who took part in this study is provided in Table 2 and these participants are five of a total of 18 who took part in the PGCE geography programme during 2020–2021.

**Table 2.** Participant information.

Name	Contextual Information	Demographic Information
Alyson	Undergraduate degree in Anthropology, prior career in corporate sector, past and continued work as a sports coach.	Female, early-30s, White British. Parents did not attend HEI.
Danny	Undergraduate degree in Environmental Science, prior work experience in local government, past and continued work as outdoor education guide.	Male, mid-20s, White British. At least one parent attended HEI.
Isla	Undergraduate degree in Politics, prior work experience in corporate sector, past experience teaching English as a foreign language.	Female, mid-20s, White British. At least one parent attended HEI.
Lucy	Undergraduate degree in geography, prior experience with secondary school pupils as a sports coach.	Female, mid-20s, White British. At least one parent attended HEI.
Paul	Undergraduate degree in geography, prior work experience in customer service.	Male, mid-20s, White British. Parents did not attend HEI.

## 2.2. Analytical Process

Reflexive Thematic Analysis (RTA) is a method for analysing qualitative data that identifies patterned meaning across a dataset, where researcher subjectivity is viewed as a resource through which to develop new understanding, rather than as an impediment to be overcome [36,37]. Braun and Clarke’s [38] earlier articulation of Thematic Analysis and their subsequent work [36] have had broad application across various disciplines and research areas, including education (e.g., [39]). Through RTA, researchers actively interpret data and create new meaning through systematic phases of research that are iterative and discursive rather than through the rigid application of a codebook or framework. Phases of analysis include (1) data familiarisation; (2) coding the dataset; (3) generation of initial themes; (4) reviewing themes; (5) defining and naming themes; and (6) writing up the analytic narrative in the context of the literature [38,40]. Through these reflective processes, researchers generate new patterns of shared meaning founded upon a central concept or understanding [36].

Data familiarisation occurred throughout the data collection period, through repeated reading of and reflections upon the interview data and the participants’ written reflections. In addition, I wrote my own reflections of each of the university-based subject sessions and kept a weekly written summary of the key ideas and questions to track my own thinking

around the delivery of the PGCE geography programme in its first year and the ways in which I was able to implement the practice and ethos of environmental justice. A further key purpose of these written summaries and commentaries was to enable me to foreground and reflect upon my tripartite role as that of (1) leading the PGCE geography programme, (2) the personal tutor of four of the five participants, and (3) a researcher interested in the development of teacher identity. Expertise drawn from each of these roles informed my understanding of the experiences participants shared through their interviews and written reflections. My familiarity with the participants through my teaching role enabled for rich conversations and I argue that I was better able to draw more nuanced understandings from my analysis of participants' data who I knew well compared to those I had never met or taught. However, it is important to underline that participants were regularly reminded that their involvement was completely voluntary and that their contribution to this study had no bearing on the outcome of their PGCE.

Steps 2–5 of the RTA process involved the researcher reflecting, on average, fortnightly during the period October 2020–April 2021 to consider the ways in which participants' ideas and visions of Environmental and Sustainability Education (ESE) were present in the data generated through interview transcripts and participants' and researcher reflections. For example, I looked at ways in which ESE was described and framed in relation to university-based sessions and classroom practice and I considered where ESE was integral to experiences of teaching and learning and where it was not. I reflected upon the ways in which participants articulated their professional identities as teachers and geography teacher over the course of the three interviews and through their written reflections. My analysis was situated in my familiarity with both the role of identity within teacher professional development writ large, my understanding of the specific ethos and practice of the PGCE geography programme and my knowledge of the participants. Therefore, my analysis was directed by these existing ideas and theoretical framings from the literature that considers teacher identity and environmental justice as well as my experiences as a geography teacher and teacher educator. Drawing on the approach articulated by Hoffmann et al. [41], during the process of writing this article, I shared my reflections with the participants and asked them to critically read drafts and to share with me whether their experiences were represented in an accurate, fair and, as far as possible, comprehensive way. This provided clarifications and led to reframing of a number of insights.

### **3. Results and Discussion**

In the following section, I document, evaluate and reflect upon the ways in which trainee secondary school geography teachers develop their professional identity in the context of ESE in response to my two research questions: (1) What challenges and opportunities do secondary school trainee geography teachers experience in the context of ESE? (2) How do trainee secondary school geography teachers develop their professional identities in the context of ESE? An overview of the research findings and analytical process is provided in Table 3.

Below, using excerpts drawn from the interviews and participants' reflections, I discuss each theme in turn.

**Table 3.** Superordinate themes, sub-themes, codes and indicative interview and/or reflections data.

Superordinate Themes	Sub-Themes	Codes	Indicative Interview and/or Reflections Data
Theme A: Diverse ways that teachers approach ESE through geography.	Enquiry; overarching questions; criticality; geography foregrounds the interconnectedness of nature and society; place of play and pleasure in ESE; value of holistic and embodied learning in ESE.	Critical thinking, asking questions, critical lens, play, enquiry, holistic learning, embodied learning, interconnections, temporal and spatial scales, flexibility of thought, outdoors, problem solving, case studies.	'Play is a physical, pleasurable act, it brings joy and wonder, maybe because I've been a sports coach for so long, play is part of that, I don't like these didactic, passive methods I want the energy that comes from movement and trying out ideas with our bodies, not separate from our minds'. Alyson, Phase 2 interview.
Theme B: The value of teachers' and students' ideas, stories and personal connections with the environment.	Care for and connection with the planet; modelling sharing opinions/ideas/asking questions; sharing experiences of places, people and careers beyond the classroom; providing space for young people to speak, be heard and listen to each other.	Relationships, rapport, role model, stories, relevance, integrity, opinions, valuing difference, broadening perspectives, outdoors, diverse cultures, new spaces, lived experience, giving voice, being heard.	'I tell them a lot of stories about my life ... like times I got lost in the mountains, times my friend did the route planning wrong and we were out for two extra hours ... and I try and bring it alive like that. I let them use that real materials ... we're using real OS Maps so that we are opening out these landscapes before their eyes.' Danny, Phase 3 interview. 'These young people are going to be the ones who are dealing with all the problems we have got with the environment right now so it is really important to give them the opportunity to speak ... and say what they think as long as they back it up with evidence and that could be their own experience and values...' Lucy, Phase 2 interview.
Theme C: Teachers seek to enable young people to bring about change in their own lives and communities.	Importance of envisioning the future in prompting student agency and action; supporting young people to become citizens that uplift their communities; framing ESE through hope and hopeful approaches.	Future, hope, global citizens, building community, heartfelt citizens, 'do right', action, values, apathy vs. action, forming opinions, controversial issues, individual agency.	'I wanted the girls to get an ideas of what they could do, the decisions they could make, looking into the future as a way of thinking about sustainability ... it is about making it real and important and giving them the framework to think about how they can act to make it better in the future' Paul, Phase 2 interview.
Theme D: The contested nature of foregrounding ESE in the geography classroom.	The place of outdoor learning; weight of responsibility dealing with controversial issues that have a moral dimension; the value of enquiry in the context of curriculum demands.	Real vs. perfect; integrated vs. compartmentalised; time constraints; curricula constraints; pleasure vs. fear; tension, emotion, morals, values, controversial issues.	'With climate change you've got to learn the evidence of climate change, these are three different types of evidence, where do emissions come from and there is that lack of critical sort of analysis of that. Yes, China has those emissions levels, but they do have loads of people. Who is benefiting from those emissions? Who is buying all the Chinese products? So, is that really China's emissions? That sort of thing. There just isn't a scope for critical thinking I've tried to introduce that in some of my year eight lessons, which they found really engaging. But for year nine they start GCSE's and then that's not there, because there's not the space for it.' Isla, Phase 3 interview.

### 3.1. Theme A: Diverse Ways That Teachers Approach ESE through Geography

Participants described a range of approaches that they understood to be of value and relevance when implementing ESE in the secondary geography classroom. Elements of these approaches included: criticality and asking questions, the interconnected nature of geography and playful approaches and embodied learning. For both Lucy and Isla,

providing students with the opportunity to ask questions of the information they were given during geography lessons and the time to discuss this information with their teacher and peers as a perspective or viewpoint rather than the only way of understanding or explaining an issue was central to their approach and allowed students' misconceptions to be identified and challenged. Isla reflected:

'I have brought from the beginning this critical view . . . I would like students to include those elements of doubt, so in Year 10, the Clark-Fisher model of development, and actually asking the questions, is this possible? Is this model replicable across the world? Who will grow the food we eat? It is about incorporating that level of critical thinking into everything, considering all information as a viewpoint or perspective, not immediately accepting as fact . . . ' (Isla, Phase 2 interview)

Alyson (Phase 1 interview) described how she wanted to 'equip young people to be critical thinkers, where they are moving in the world and they can relate to people with other ideas' and Paul highlighted the importance of school geography as a space where young people could experience a greater range of ideas and perspectives and, that teachers could help them develop their thinking beyond that of their home contexts:

'I do hope and believe somewhere inside me that teachers and geography teachers can do something for people from my background, my parents never went to university . . . my parents brought me up and helped me to think but it is really the inspiring teachers at school . . . who gave me support to think for myself and challenge the ideas and perspectives I got at home . . . ' (Paul, Phase 2 interview)

The interconnectedness of geography, i.e., how relationships between society and nature could be better understood through geography featured in the reflections and discussions of both Isla and Alyson who had undergraduate degrees in Politics and Anthropology respectively. Alyson shared how through learning about aspects of physical geography, for example, glaciation, she was able to 'feel more integrated to these spaces' and that this was a surprise to her because through mountaineering she had already spent significant amounts of time in these kinds of environments. Isla reflected that geography had enabled her to consider the environmental aspect that had always been 'missing' in politics and that without integrating the environment understanding of an issue, for example development, could only be partial and lacking detail and nuance. Perhaps unsurprisingly, Paul, Danny and Lucy did not foreground the importance of this interconnection in their reflections—this is perhaps because as geography (Paul, Lucy) or Environmental Science (Danny) graduates, they took this disciplinary aspect as read.

Playful approaches and embodied learning were a key aspect of Alyson's approach to geography across the three interviews. Alyson (Phase 1 interview) described how through play, she wanted to create opportunities for young people to learn about geography in a way that was 'joyful' and 'pleasurable', where they used their 'whole bodies'. Alyson drew on her experiences as a sports coach to share the value of learning collaboratively through games and play where the body and the mind are 'connected' she said, 'I feel like we need to integrate the body more into education it is so bizarre to me that we just leave this whole landscape of ourselves outside the door and we are expected to sit at a desk and learn in such a linear, sedentary way' (Phase 2 interview). As part of her Phase 3 interview, Alyson shared how she had implemented a playful and embodied approach through teaching coastal processes with Year 10 by incorporating music and movement in the drama studio rather than only through copying out labelled diagrams in the classroom. When describing this approach, Alyson explained how she had drawn on ideas about play as part of the literature review for a PGCE assignment so that her thinking was 'rooted in research about play' as well as her experience as sports coach. Alyson described how the students were excited and engaged, asking her about what they would be doing in subsequent lessons and that students in other classes had asked her if they would be able to have a similar lesson. Alyson said:

‘the fact that they are enthused, the fact that they are asking me what will happen next and talking about their lessons in an excited and positive way outside of the classroom, that for me shows the value – I have got their engagement I am helping them connect with something quite abstract.’ (Alyson, Phase 3 interview)

Finally, Alyson acknowledges that even with a range of approaches it was not always able to reach students and support them to connect with and value the environment as she described an encounter with a Year 10 student who dropped litter in the classroom:

‘I feel like if we can cultivate a love of these spaces in the classroom hopefully when they’re moving in these environments we can help shape citizens who are going to look after it, but on the flip side, I’ve got a really challenging student and she chucked her litter on the floor and I asked her to pick it up and she was like why should I? The cleaners will do. I tried to explain that it’s not somebody else is job to pick up your litter but I don’t think she got it so, there is lovely change that you can see in a classroom, but some young people just aren’t engaging in the ideas. (Alyson, Phase 3 interview)

### *3.2. Theme B: The Value of Teachers’ and Students’ Ideas, Stories and Personal Connections with the Environment*

When teaching about the environment and sustainability, participants frequently chose to share their own ideas and stories in relation to the environment as a way of supporting young people to make their own personal connections. Alyson drew on her experiences as a leader of outdoor learning (including walking and mountaineering) with adults and children and described how in the classroom, she would tell stories of her own experiences of being in glaciated or coastal landscapes, using OS maps to navigate themselves and shared what they saw and how they felt. For example, Alyson described how when teaching a lesson on glaciation and glacial features, she used footage from a body-camera worn by a mountaineer as he moved across Striding Edge, part of Scafell Pike, Cumbria, UK, to illustrate the different features ‘through adventure’. Alyson said, ‘I wanted to embed that feeling, that experience of excitement and awe, I wanted to share those feelings I had when learning about these places’ (Phase 2 interview). Alyson described how she wanted to imbue in young people a sense that these landscapes were accessible and available to them, that they had the ‘right’ to explore and enjoy them:

‘I want these young people to understand these places, understand these are playgrounds for them, I want them to go out and access and experience this because it is free. They deserve to be in these spaces.’ (Alyson, Phase 2 interview)

Lucy, Danny and Isla described how they used examples from their own experiences to introduce or illustrate concepts or case studies with young people. For example, Isla shared how her experience of snorkelling in the Great Barrier Reef had given her a greater appreciation of the need to protect these spaces from damage caused by sea-temperature rise. In a lesson exploring carbon footprints Danny shared how he cycled to school as part of his effort to reduce emissions and Isla shared how she had become vegetarian. Relatedly, Lucy described how migration had featured in her own family story, with the movement of her grandparents to Europe during the mid-twentieth century to escape fascism. In these ways, Lucy, Danny and Isla sought to bring a sense of ‘relevance’ and ‘connection’ with places (coral reefs) and concepts (sustainability, migration) that might otherwise be difficult for young people to engage with and, through their own experiences and stories, invite students to ask questions to both reduce misconceptions and through their answers encourage young people to see that they can also develop their own ideas and stories.

Linked to the idea of students asking questions and developing critical thinking explored as part of Theme A, participants shared how they as geography teachers had an important role in providing the space and opportunity for young people to share their own ideas and experiences. Lucy described how through teaching topics such as population and resource use, she found that students wanted to both ‘learn and speak and to find out

things beyond what I'm teaching them'. Lucy shared how she intentionally gave students the chance to share their experiences, for example something about their family, a country that they had visited and that, through feedback from her mentor, she felt more confident to include lengthier periods of discussion in her teaching:

'My mentor said, 'if they want to talk about it, let them talk about it, don't cut them off, if they want to have that discussion let them be heard' and I think that was so important, to know it was ok to let them all speak and get a bit of a debate going and hear their opinions and ideas.' (Lucy, Phase 2 interview)

Lucy also reflected that, as students progressed to GCSE, there was a tension between giving students the time to share their ideas and ensuring that the curriculum content was taught and this conflict is explored further in the final theme.

### *3.3. Theme C: Teachers Can Enable Young People to Bring about Change in Their Own Lives and Communities*

For Paul and Isla, framing ESE through a lens of problem solving for the future was a way to support young people to develop agency and to understand their role in bringing about change in their own lives and communities. For example, Paul described a series of Year 7 lessons focused on sustainable cities, including the development of brownfield and greenfield sites. Paul chose to frame the lessons around the local area of the school and posed questions which encouraged students to develop their ideas for the future of their city so that students could 'look beyond what is happening now so that they can develop hopeful ideas for the future' (Paul, Phase 2 interview). Paul described how looking into the future provided a way of reducing apathy and promoting action so that students could see their role in making a positive change in their area. Relatedly, Isla highlighted the value of framing issues around sustainability and environment through the future as a way of:

'reducing negativity and seeing climate change as an intractable issue where nothing can be done . . . instead I want to empower students to take the small steps, so send that email to your MP or buy less plastic so that they are empowered and can see that their lives and actions are of consequence.' (Isla, Phase 2 interview)

In contrast, rather than drawing on the lens of the future, Alyson used the model of building a supportive community within her classroom to encourage her students to become 'conscious global citizens':

'I want every class to build a community in that room, we speak about it lessons, the way that everyone can contribute, we can all support each other to grow, we can model how to be conscious global citizens from the big ideas of how to protect the Amazon starting from the ripple effect in your own lives, how you engage with people on a small scale . . . that community is really starting to happen in my classroom which is lovely.' (Alyson, Phase 3 interview)

Although all the participants shared how they had explored ESE during their teaching, they also reflected that this work was not without tension or contestation and these ideas are considered in the final theme.

### *3.4. Theme D: The Contested Nature of Foregrounding ESE in the Geography Classroom*

During his second interview, Danny shared how he had experienced tensions between his desire to use real-life, relevant examples in his teaching so that geography became something tangible for his students with the need to include 'text-book' answers that would provide students with the precise information they would need to complete an assessment answer:

'There has been a bit of flooding on the river near my house so I took photos on a dog walk and included the images of the real river with real processes in my lesson but my mentor said that she didn't think they were clear enough, they wouldn't get the information they needed for the test and that I should use

a Google image where there is no doubt or nuance, and I was disappointed, I thought a relatable image where I could talk about it was what was needed to bring geography alive.’ (Danny, Phase 2 interview)

Danny reflected that he incorporated this feedback from his mentor by changing his approach to making geography ‘relatable’. For example, he included up-to-date, relevant examples and case studies taken from recent news articles (e.g., a proposed development of a coal mine in Cumbria) to ensure that the content was something that the students saw as relevant to them. In this way, Danny did not move away from using ‘real’ examples but changed his approach following feedback.

Isla, Danny and Lucy all described the tension they experienced when trying to ensure there was enough time for students to share ideas, ask questions and have discussions whilst still learning the curriculum in sufficient detail and depth in the given time. This tension was most felt during GCSE teaching and participants had different responses to this. For example, Danny highlighted that the teacher could still incorporate ‘golden nuggets’ and ‘big ideas’ of ESE when teaching almost any topic, even when it was ‘only related to what they are learning but not essential to students being able to answer a particular question’ (Phase 3 interview). Lucy also emphasised her ability to ‘share her opinions and not just deliver the textbook’ (Phase 2 interview). In contrast, Isla suggested that the constraints of the GCSE curriculum meant that she did not feel able to include related information about ESE as part of a topic unless it was directly part of the specification:

‘With climate change you’ve got to learn the evidence of climate change, these are three different types of evidence, where do emissions come from and there is that lack of critical sort of analysis of that. Yes, China has those emissions levels, but they do have loads of people. Who is benefiting from those emissions? Who is buying all the Chinese products? So, is that really China’s emissions? That sort of thing. There just isn’t a scope for critical thinking I’ve tried to introduce that in some of my year eight lessons, which they found really engaging. But for year nine they start GCSEs and then that’s not there, because there’s not the space for it.’ (Isla, Phase 3 interview)

Alyson described tension she experienced when trying to incorporate ESE into her teaching and reflected that other teachers saw her as an ‘idealist’ and that she felt frustration that more experienced teachers saw her enthusiasm for trying out ideas and approaches as something that would dissipate as she became more experienced. Paul also expressed annoyance that other teachers were surprised and gently critical of the time he had taken to develop resources and materials as part of his teaching of sustainability. Alyson and Paul shared a perspective that taking time to develop new approaches and refresh case studies that had relevance for students was part of what was needed to be a ‘good’ teacher of ESE and could not relate to the perceived apathy shown by more experienced teachers.

#### **4. Implications**

Having explored and reflected upon the ways in which trainee secondary geography teacher experience ESE, all the participants in this research sought to develop ESE as part of their work as a geography teacher. Participants approached this in a variety of ways including valuing critical thinking, incorporating playful approaches and foregrounding teacher and student stories and personal connections with the environment. Furthermore, all the participants saw ESE as a valuable part of teaching geography. Some described how a ‘deep care for the planet and the people on it’ (Isla, Phase 1 interview) and a desire to ‘help other people engage with the world’ (Paul, Phase 1 interview) was part of why they chose to become geography teachers and as such forms part of their nascent teacher identity. This is perhaps unsurprising, as the participants had elected to join a PGCE programme which explicitly foregrounded an environmental justice approach and included course materials and literature that were written and chosen to provide frequent opportunities for all trainees to develop ESE as part of their practice.

The intention of this research was to explore the ways in which secondary geography teachers develop their identities as environmental and sustainability educators during their training year and to consider the challenges and opportunities that teachers at this earliest stage in their career encounter. By carrying out three interviews at different points during the PGCE, it has been possible to consider the ways in which the ideas and values teachers hold are shaped by classroom practice. This research clearly shows the tensions and conflict that participants experienced relating specifically to ESE. For example, Danny realised that although he had ideas about how he would like to implement ESE in his lessons, his lack of teaching experience, specifically teaching a range of topics within the curriculum was a 'serious limiting factor' (Phase 2 interview) and meant that he was not (yet) able to draw synoptic links focused on sustainability and climate change across different topics and themes with students. Similarly, Lucy acknowledged that her inexperience could constrain her ability to incorporate opportunities for students to share and debate ideas and develop their opinions through class discussion in a way that was effective but also used lesson time efficiently. Danny and Lucy shared how they recognised that although they were not always able to implement ESE as they would like to, they intended to continue to develop their practice in this way, as enabling young people to become 'critically aware global citizens' was a key part of why they became and want to continue to become geography teachers.

Alyson and Paul discussed their frustrations with the apathy that they perceived in other teachers that they worked with relating to ESE and how developing new resources and approaches was seen to be too time consuming by other more experienced colleagues. For both Alyson and Paul, this apathy was something that they saw reflected in wider society in relation to the environmental issues and they each described how they sought to empower their students to remain engaged and active with issues such as climate change and sustainability. For example, Alyson chose to foreground opportunities for students to engage with natural environments (for example, their local coastline) and to position these spaces as 'free playgrounds' for young people to enjoy and explore. Paul took a different approach and instead developed projects where young people engaged with local issues (for example, air pollution) and sought to bring their geographical knowledge to imagine and identify future solutions and possibilities. Each of these approaches positioned students as having agency and ownership of spaces and challenges and required significant work research, planning and teaching from both Paul and Alyson. They each saw this a fundamental part of their role as geography teachers—to support students to become 'heartfelt citizens who could bring change in their own lives and uplift their communities' (Alyson, Phase 1 interview) and, as teachers, 'to broaden young people's perspectives' and 'to do right' (Paul, Phase 1 interview). Alyson also noted the 'emotional load' she experienced when teaching ESE and the pressure she placed upon herself to ensure that she provided a safe, open space in her classroom where students could ask questions and share their opinions of and responses to difficult topics relating to ESE including migration and resource use. Alyson contrasted the importance of taking time to plan, teach and reflect upon lessons focused on such challenging topics with the 'needless bureaucracy' of schools and shared her hope that as her career developed, she would be able to persist with her desire to empower young people through geography and not be 'weighed down by school systems and paperwork'. Already, at this very early stage in their careers, these trainee teachers experience tension, conflict and frustration when enacting their identities as teachers who value ESE and, in response to this, they adapt their practice rather than move away from ESE.

Further research with these five participants will enable a greater understanding of how their identities as ESE teachers change and develop during their first two years as Early Career Teachers (ECT). It is also important to note that the findings from this study have been gathered during a period of global pandemic, where concerns about curriculum content coverage, lost learning time and external examination pressures are particularly acute [33]. Nevertheless, it is important to consider how best to support teachers who enter



the profession who see themselves as ESE teachers so that they thrive rather than struggle to survive and can in turn invite and evoke in other students and colleagues to engage with ESE. As a starting point for this reflection and at the early stage in the implementation of a new PGCE geography programme, I highlight two aspects of the findings from this research that inform my future thinking for the development of the course.

The first of these is implications for me to explore and reflect upon geography pedagogies from higher education settings that use ‘futuring’ approaches, or where knowledge is coupled with ‘the active imagination of the future’ as an approach to teaching seemingly intractable issues, such as climate change [41]. Such approaches include students working with policy makers as well as geography academics, developing a timeline for future events through group work and, designing an exhibition as part of ‘The Museum of the Future’ [41]. These activities are rooted in ideas of student agency, empowerment and contribution to societal debates beyond the necessary requirements of academic work. They have strong resonances with the approaches described in particular by Isla, Lucy and Paul, who sought to use geography as a way of developing students’ ‘critical view’ of the world. Drawing on futuring as an explicit approach during subsequent iterations of the PGCE may provide a more detailed and nuanced framework for trainee teachers to implement ESE in a way that aligns with their values and identity.

The second implication that this research has raised for me as a teacher educator is to consider how best to nurture and support the development of teachers’ professional identities in general and within the specific context of ESE. Although reflection is a core part of the PGCE programme, with trainee teachers required to regularly reflect both in writing and orally, this reflection is frequently linked to the Teacher Standards [42] and is, therefore, at least implicitly linked to notions of progression and assessment. Participants in these interviews understood that their contributions were for research focused on teacher identity development and were not linked in any way to their advancement on the PGCE. Furthermore, each participant shared how valuable they found the experience of regular interviews that were focused on exploring their values and identity in a holistic way, over time. Alyson shared how the interviews enabled her to focus on the ‘joyful’ aspects of the PGCE and supported her to ‘move forwards in a career that has deep value’ (Phase 3 interview). Isla, Lucy and Alyson noted that they thought about what they had shared as part of the interviews afterwards and in preparation for the next interview. Danny and Paul reflected that although the PGCE had many demands they made time for these optional interviews because they found them to be valuable for their own development but also because they wanted to contribute to research focused on teacher education. All participants shared how these interviews were distinct from PGCE tutorials which had a more administrative focus on tracking progress and setting targets. As of September 2021, teacher education moves into a new phase of policy development which includes the extension of the newly qualified teacher (NQT) year across two years work as an ECT [43]. I argue that some of this time might be usefully dedicated to providing teachers with the opportunity to discuss and reflect upon their professional identities as teachers through semi-structured reflexive interviews with those who have expertise as teacher educators. Such an opportunity could provide a space for teachers to articulate sources of tension, conflict and frustration as they seek to enact their nascent identities and to share their joy, excitement and belief in the value of both ESE and education writ large.

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Article

# More Than Two Decades of Research on Selective Traditions in Environmental and Sustainability Education—Seven Functions of the Concept

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**Abstract:** This study investigates functions of the concept of selective traditions by means of a qualitative systematic review synthesis of earlier research. The study is based on a review method for integrating qualitative studies and looks for “themes” in or across them. In this case, it is about how the identified publications (twenty-four in total) use the concept of selective traditions. All but two studies stem from the Swedish context. The selective traditions relate to teachers’ approaches to the content, methods and purposes of environmental and sustainability education (ESE). Teachers mainly work within one specific selective tradition. Seven different functions were found in the publications of which five are claimed to be valuable for the development of ESE teaching, while the other two functions are useful in monitoring changes and development in ESE teaching. The results are discussed in terms of the consequences for research, practice and teacher education aiming at offering suggestions on how to develop future (transformative) ESE teaching.

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**Keywords:** selective traditions; teaching traditions; teaching habits; environmental and sustainability education; functions of teaching; functions of education; ESD teaching approaches

## 1. Introduction

This study investigates functions of the concept of selective traditions by means of a qualitative systematic review synthesis of earlier research. The study is based on a review method for integrating studies and looks for “themes” in or across them [1]. In this case, it is about how studies use the concept of selective traditions as described by different functions. Selective traditions relate to teachers’ approaches to the content, methods and purposes of environmental and sustainability education (ESE). Three teaching traditions of ESE have been identified in previous research: the fact-based tradition of conveying facts, the normative tradition that argues for certain values and lifestyles and the pluralist tradition that focuses on students’ participation and emancipation. Teachers mainly work within one specific tradition. However, the traditions are not usually recognized by the teachers themselves, but by researchers using analytical tools. In this study, we identified the specific functions these three selective traditions had been reported to have in previous studies both from an educational and research perspective. The results are discussed in terms of the consequences for research and practice aiming at a systematic development of informed future ESE teaching.

## 2. Background

Research on the teachers teaching different school subjects has shown that they all have different ways, or traditions, of selecting educational content and methods. These traditions can thus be termed selective traditions [2]. Selective traditions can be understood as what teachers consider good teaching. The concept of selective traditions is useful when

discussing environmental and sustainability education (ESE) with teachers in that it is a way of expressing their ambitions to change and develop teaching in a reflected and informed way [3]. The selective teaching traditions of ESE are useful for understanding the role of teachers, students and the purpose of education [4] because it focuses on teachers' responses to the question that is often posed by students, "Why should I learn this?" [5].

The implications for teacher education are also strong [6]. Often, teachers teach in the way they were taught at university; this needs to be recognized and addressed in teacher education so that student teachers are aware of how to change from disciplinary teaching of adults to teaching children and adolescents school subjects [7]. Student teachers need support from teacher educators to change from the focus on disciplinary facts and concepts to also emphasize the importance of students' interests and participation. There is a shift from disciplinary knowledge to everyday knowledge that teacher education needs to pay attention to, and in this, the concept of selective traditions is a useful tool [8].

In the Swedish context, selective traditions have been investigated for more than two decades in science education and environmental and sustainability education research. The most important finding has been the identification of three teaching traditions within environmental and sustainability education: the fact-based tradition, the normative tradition and the pluralistic tradition. These traditions have provided research and practice with an analytical tool that can be used to discuss the role and purpose of education [9] and the students' democratic participation in it [10]. In the following section, we discern these traditions in more detail.

### 2.1. Three Selective Traditions in ESE

Three selective traditions have been identified in environmental education (EE) in Sweden since the 1960s, with reference to educational philosophy and how environmental and developmental problems are understood by teachers [9]. Sandell, Öhman and Östman [9] described three educational philosophies connected to selective teaching traditions: essentialism, progressivism and reconstructivism. The starting points in these three educational philosophies also indicate three different solutions to environmental problems: to the lack of relevant scientific knowledge (facts), to weakly developed attitudes and un-reflected lifestyles (unclear norms) or in the form of informed attempts to solve conflicting human interests (pluralism of solutions).

Selective traditions were studied for the first time in a large study of teachers ( $n = 568$ ) in the Swedish school system by the Swedish National Agency for Education (2002). Teachers mainly work within one tradition. It is important to point out that the descriptions of these traditions (outlined below) were summarized in order to make them easier for the reader to grasp. The traditions are teachers' teaching types. The descriptions outlined below closely follow the original descriptions [3].

The fact-based tradition was formed in the early development of EE. Environmental issues are regarded mainly as ecological issues. Environmental problems are based on the lack of knowledge and can often be solved by science. There is an assumption that if teachers teach scientific knowledge at school, environmental problems will disappear more or less automatically. From the environmental ethics perspective, this tradition lies within modern anthropocentrism. The natural world is considered to be separate from humanity. In terms of educational philosophy, this tradition is closest to essentialism. Essentialism means that the content of education ought to be based on science, that the actual subject matter has priority and that the teaching uses adapted scientific terminology and models. The pedagogic task is to teach pupils the right knowledge and proper knowledge. The teaching style in this tradition is mainly through lectures, with very little group discussion or activities in which the learned knowledge can be applied. Teachers make the planning [9].

The normative tradition emerged during the societal debate in the 1980s, e.g., as a result of the nuclear power referendum in Sweden. Environmental issues are primarily a question of values, where people's lifestyles and their consequences become the main

threats to the natural world. Scientific knowledge can offer hints about the good ways of living and be prescriptive in decision-making. According to the teachers of this tradition, right knowledge is assumed to automatically lead to better values that make people want to change their lifestyle. From an ethical point of view, humans are regarded as an indispensable part of nature and should therefore adapt to its conditions; it is a biocentric view. The teaching content is partly organized in a thematic way and requires content from many disciplines. Attention is paid to the use of pupils' everyday experiences and attitudes when creating teaching examples and tasks [9]. The starting point in progressivism puts pupils in the central position, where the teaching is organized in accordance with the needs and interests of the group of pupils.

The pluralistic tradition developed during discussions in the 1990s. An increasing uncertainty about environmental issues and the number of different standpoints in environmental debates (e.g., Rio Summit 1992) are important points of departure for this tradition. Environmental issues are viewed as political problems and are regarded as conflicts between different human interests [10]. Science does not offer guidance on how to act when it comes to solving environmental issues. In this tradition, EE includes the entire spectrum of social and economic development and is replaced with the concept of ESD [11]. The conflict-based perspective of ESD highlights that everyone's view on environmental issues is regarded as being equally relevant. Pluralism is an important starting point for the conduct of teaching in ESD. Pupils develop their abilities to engage in the development of a sustainable society. This suggests that the lessons are reconstructivist in character. Reconstructivism emphasizes the role of the school in the democratic development of a future sustainable society. Teaching methods and approaches vary from an individual search for more scientific facts to writing articles or formulating arguments that can be used and published in newspapers.

Other ways of describing selective traditions in other countries can be found as well. Sauvé [12] and Stables [13] described selective traditions in EE in the context of Canada and the UK. Sauvé's starting point is in the contemporary development of a societal environmental consciousness and discourse, while Stables starts by discussing the importance of enhancing nature relations. Vare and Scott [14] described two types of ESD in the UK that have some similarities with selective traditions: ESD 1 and ESD 2. ESD 1 facilitates a change in our ability to deal with the problems of the present and how we live now by promoting behavioral change, a shift in habits or a change in how things are thought about, where the need for this has been clearly identified and socially agreed on. ESD 2 facilitates a change in our ability to deal with an uncertain and unknown future by enabling pupils to think critically about (and beyond) what is known now and what experts say and to test sustainable development ideas [14].

## 2.2. *The Importance of Functions in the Research on Selective Traditions in ESE*

This is a review study on the use of the concept of selective traditions in ESE research. The qualitative differences in the use of the concept in different publications can be regarded as different themes, which in this article are called functions. These functions are developed across individual studies described in ESE research publications where the concept is used in a similar way.

This study was inspired by Biesta [15], who describes the purpose of education in terms of functions. A function is described by Biesta as an overarching purpose of education that reflects its aim. In the work by Biesta, he identifies three functions of education. The first function is that education has a role to play in pupils' socialization into the society by conveying social, political and cultural values and behavior that aim to preserve a specific democratic society. The second function is that education contributes to pupils' qualifications, thereby advancing their knowledge, skills and competences for their lives in various areas, such as the labor market (different professions), further studies and as citizens. The third function is that education has a role to play in pupils' subjectification.

This is about the emancipation of pupils as humans and providing them with agency as citizens.

Biesta's [15] approach of using different functions to describe the purpose of education inspired this study to discern the functions the research of a specific concept, in this case, ESE selective traditions, has identified. These identified functions can be used as analytical tools, which can inform the analysis and development of future ESE teaching. This means that different functions of the concept of selective traditions can be used to understand how new and future ESE teaching can be better reflected upon and developed in research, practice and teacher education [16].

### 3. Purpose

The overall purpose of this study was to offer researchers and educators a qualitative systematic review of more than two decades of empirical research on selective traditions in environmental and sustainability education research. Here, the different ways of using the concept in research are referred to as functions. The purpose of the study was to investigate how the concept of selective traditions in ESE research had been assigned qualitatively different functions in earlier research. The study's research question is, "Which functions of the concept of selective traditions are discernible in earlier ESE research?"

### 4. Method and Review Design

For the study, a systematic review was used as method. Systematic reviews seek to draw together all known knowledge on a topic area. In this endeavor, study designs incorporating quantitative, qualitative and mixed method studies can be used [1]. In this study, we used qualitative analysis, but the included studies represent both quantitative and qualitative studies. In the analysis of the selected studies, we used thematic analysis looking for "themes" or "constructs" in and across the individual studies and determined their functions [1].

#### 4.1. Literature Search

The review began with a systematic search of selected terms and term combinations in databases (ERIC, EBSCO) and Google Scholar [17]. The terms used in the search represented different combinations of the key terms: "habitual teaching" and "EE/ESD/ESE," "selective" and "EE/ESD/ESE," "selective traditions" and "EE/ESD/ESE," "teaching traditions" and "EE/ESD/ESE." All the studies identified from the search were included in the following analysis. The identified publications (twenty-two in total) were journal articles (fifteen), one doctoral thesis, two books, three book chapters and one national report. Twenty studies were conducted in Sweden, one—in the USA/Spain, one—in the Netherlands. Two manuscripts, one book chapter in progress and one article manuscript in review written by the authors of this literature review, were included. These twenty-four publications in total consisted of five theoretical papers and eighteen empirical studies using surveys, interviews (teacher/pupil), focus groups (teachers) and textbooks as primary data from secondary and upper secondary school. The twenty-four publications are listed in alphabetical order below:

- Borg, Gericke, Höglund and Bergman, 2012;
- Borg, Gericke, Höglund and Bergman, 2014;
- Callahan and Dopico, 2016;
- Education, 2002 (national report);
- Gyllenpalm, Wickman and Holmgren, 2010;
- Lidar, Karlberg, Almqvist, Östman and Lundqvist, 2018 (book chapter);
- Lundegård and Wickman, 2007;
- Lundqvist and Sund, 2018;
- Rudsberg and Öhman, 2010;
- Sund, 2008 (book chapter);
- Sund, 2016;

- Sund, in progress (book chapter);
- Sund and Gericke, 2020;
- Sund and Gericke, in review;
- Sund, Gericke and Bladh, 2020;
- Sund and Wickman, 2008;
- Sund and Wickman, 2011a;
- Sund and Wickman 2011b;
- Sandell, Öhman and Östman, 2005 (book);
- Van Driel, Bulte and Verloop, 2008;
- Van Poeck, Östman and Öhman, 2019 (book);
- Öhman, 2004 (book chapter);
- Öhman and Östman, 2019 (book chapter);
- Östman, 1995 (thesis);

#### 4.2. Analysis of the Publications

As already indicated, the aim of a systematic review is to look for “themes” in and across individual studies to extrapolate new general meaning from the included studies [1]. The analytical question used to discern the crosscutting themes was, “How is the concept of selective traditions used in the actual publication?” The twenty-four identified publications were read several times and the focus of the analysis was to find crosscutting themes of what function the concept of selective traditions was given.

First, relevant information was extracted from each publication using a coding sheet. Coded information included both descriptive study characteristics and study findings as guided by the review question related to the function of the concept of selective traditions in the study. Tentative themes were identified to obtain the first, preliminary arrangement of the studies and their findings and to prepare for synthesis. Regardless of whether the information was quantitative or qualitative, all coding had to focus on the key concepts as well as concise summaries of the study findings [1]. In some publications, the concept of selective traditions was used in two different ways, but then the analysis focused on describing its main function. This was the way of making the results of the functions more succinct and useful for ESE researchers and approach developers.

Second, the data analysis stage of the synthesis work was done iteratively, by repeatedly and in a cyclical process considering tentative review findings in relation to individual study findings. The publications with similar answers to the analytical question together formed a specific function. Synthesis meetings were alternated with re-readings of the studies. The purpose of the meetings was to test and, if necessary, revise tentative review findings by creating additional abstractions or reformulations.

### 5. Results

Seven different functions were found in the publications analyzed in this ESE research review, of which five are regarded as valuable for the development of ESE research and practice. Two of the functions are interesting for research on changes in teaching emphasis and the distribution of teaching approaches. The functions are presented below but are not listed in any particular order.

#### 5.1. Combining Educational Philosophy and Environmental Problems in Teaching

The first function of the concept of selective traditions in ESE is to combine starting points in educational philosophy with the characteristics of environmental and developmental problems. This function offers researchers and practitioners the possibility to reflect on the origins of educational philosophy and the purpose of ESE teaching, namely what is to be learned, how it should be learned and the nature of the sustainability challenges to be addressed. These are fundamental issues to consider when designing ESE teaching approaches.



Some of the reviewed publications [3,9] elaborated on how selective traditions evolved in environmental education in Sweden with reference to their roots in educational philosophy and how environmental and developmental problems are perceived by teachers. The analytical combination of roots in educational philosophy and how teachers perceive environmental problems resulted in the identification of the fact-based, normative and pluralistic selective traditions in EE [3,9]. The concept of selective traditions is a way of understanding how different ways of ESE teaching emphasize student participation, development of students’ democratic (communicating, listening, arguing, debating) and critical abilities (analysis, critical approach, pluralism of alternatives) [11]. Similar selective traditions were described for science teaching [18], where socio-scientific issues (e.g., climate change, sustainability, water and food scarcity) were included [19].

5.2. Analysing ESE Teaching Empirically

The second function of the concept of selective traditions is about empirically analyzing teachers’ teaching in order to discern which selective traditions are used. This function offers an analytical tool that helps researchers to empirically discern the selective traditions and transform them into a reflection tool for practitioners [8]. With the tool, teachers can individually reflect on their teaching in each educational aspect. Teacher groups can also reflect on their common teaching in extracurricular collaborations and whether they emphasize facts, values or the development of abilities [16]. The tool has also been used to discern the ESE teaching approaches of social science and language teachers [8].

Sund [20] showed in a previous literature review how EE historically developed into ESD in the Swedish context. This earlier review generated five educational aspects (see Figure 1) that show the movement of teachers’ educational content from focusing solely on the conveying of facts towards a more pluralistic teaching. The figure shows how the five educational aspects were developed into an analytical tool that included five analytical questions for analyzing teachers’ responses in interviews about their ESE teaching. The teachers’ responses made three selective traditions visible [21].

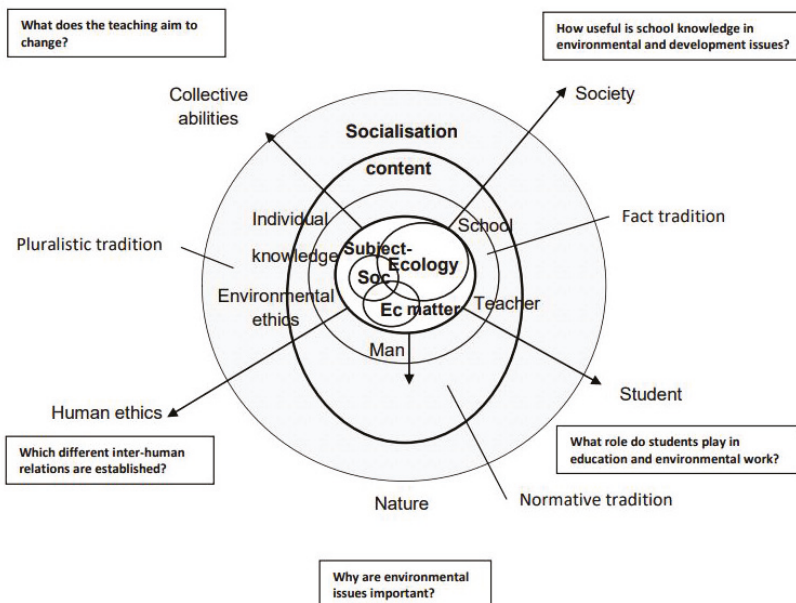


Figure 1. The educational content of each selective tradition is ‘opened up’ through five important educational aspects, each of which answers one question. The subject-matter content is consisting of ecological, economical (EC) and social issues (Soc).

Figure 1 shows in a model that the educational content connects more with the surrounding world, outside school, the further it is positioned from the center. This model can be used to analyze ESE teaching empirically. Teachers could themselves, or by others, be positioned in five educational aspects through different accounts of their EE/ESE teaching. The integrated subject matter is placed in the inner circle (shown in bold letters). This circle is the starting point in the left-hand term for each educational aspect, where the fact-based tradition is dominant (next circle outside the subject matter). The normative tradition (bold ellipse) leans more towards nature (biocentrism) and also more outwards in the other aspects. The pluralistic tradition or pluralistic approach (arrows pointing outwards from the center) connects more deeply with the surroundings [21].

### 5.3. Visualizing Longitudinal Changes in ESE Teaching

The concept of selective traditions can function as a way to illustrate or visualize how the emphasis of selective teaching traditions in ESE changes over time. This function is important in that it offers a possibility to visualize the shifts in emphasis in teaching due to changes in the curriculum or other external societal pressures on schools [22].

Table 1 shows the four research studies that analyzed teachers' teaching approaches using the concept of selective traditions. The comparison of results from these four studies makes it possible to recognize that the fact-based tradition became more dominant in the Swedish school context after the curriculum changes in 2011 [23].

**Table 1.** A summary of the distribution of science teachers in three selective traditions in four different studies from 2002 [3], 2011 [21], 2012 [24] and 2020 [8].

	Fact-Based Environmental Education	Normative Environmental Education	Pluralistic Environmental Education
Swedish National School Agency, 2002			
- Lower secondary school (67 teachers)	11%	67%	22%
- Questionnaire and interviews	(7)	(45)	(15)
- National curriculum 1994			
Sund and Wickman, 2011a			
- Upper secondary school (10 teachers)	40%	40%	20%
- Interviews	(4)	(4)	(2)
- National curriculum 1994			
Borg, Gericke, Höglund and Bergman, 2014			
- Upper secondary school (669 teachers)	40%	16%	25%
- Large-scale questionnaire	(268)	(107)	(167)
- National curriculum 2011			
Sund, Gericke and Bladh, 2020			
- Lower secondary school (15 teachers)	54%	33%	13%
- Questionnaire and interviews	(8)	(5)	(2)
- National curriculum 2011			

The results in Table 1 show an increase in the number of teachers teaching in the fact-based tradition, although several studies are case studies and not generalizable. However, the table shows that the function of selective ESE traditions to analyze and discern the involvement of ESE teaching changed over time. The trend towards fact-based teaching is also supported by the results of a coming study of Swedish science teachers in lower secondary school [25]. The increase in fact-oriented teaching may be due to the extended core content in the latest national curriculum of 2011 [23]. The teachers involved in the study said that due to the changes in the curriculum they had to focus more on disciplinary concepts and as a result had less time for group discussions or group work [25].

#### 5.4. Observing the Distribution of ESE Teaching between School Subjects

The concept of selective traditions can function as a way of observing the distribution of teaching in different subject areas, which can be important extracurricular ESE collaborations. This function offers teacher groups the possibility to discuss the selective traditions that occur in their group and how they are distributed. In order to develop a common teaching approach that offers students a learning environment which embraces facts, values and the development of action competence, there needs to be a variation in the emphasis on different selective traditions. For instance, if all teachers in a collaboration teach in the fact-based tradition, the collaboration could be less fruitful. A variation in selective traditions is thus an important key to success in extracurricular collaborations [16].

In their publication, Borg, Gericke, Höglund and Bergman [6] studied the differences in the distribution of selective traditions among teachers from different subject areas through a large-scale questionnaire study. The emphasis of science teachers' teaching was mostly on the fact-based tradition and that of social science teachers on the pluralistic tradition. Sund, Gericke and Bladh [8] showed that there were some differences in the distribution of the three selective traditions amongst teachers from different subject areas. In this publication, data were gathered from lower secondary school teachers and consisted of responses to a written questionnaire related to analytical questions in order to discern their selective traditions. The science teachers in the study worked in all three selective traditions, whereas the social science teachers mainly worked in the pluralistic tradition. The language teachers in this small sample mostly worked in the normative tradition. Although the sample is small, the results show that science teachers mainly work in the fact-based tradition, while social science teachers work mainly in the pluralistic tradition. Language teachers mainly work in the normative tradition when their teaching is related to sustainability issues [8]. This result is confirmed by those of the previously mentioned large-scale quantitative study [6].

#### 5.5. Recognising Tacit Frameworks—Facilitators of and Obstacles to Teaching Outcomes

The concept of selective traditions can function as a way of helping teachers to reflect on their tacit frameworks for teaching. These often unreflected frameworks keep teachers in specific, and often habitual, teaching approaches and can appear as obstacles to change and development. The function of tacit framing is to recognize that teachers' teaching traditions can emphasize teaching that in fact goes against the intention of the curriculum change. The consequences of this can be that pupils do not get the kind of teaching that could make them more successful in national tests. This function points to the fact that teachers need to know what their teaching emphasis is in relation to the curriculum changes on ESE issues, i.e., how they adjust their ESE teaching in an informed and systematic way towards change.

In the reviewed publications, selective traditions can be understood as conceptual schemes of what teachers consider good teaching [21]. Van Driel, Bulte and Verloop [26] used three curriculum emphases to study teachers' domain-specific beliefs about the chemistry curriculum for upper secondary education in the Netherlands. They claim that their study serves as an exemplary case of how teachers' domain-specific beliefs can be investigated and taken into account in the context of educational reform. The study clearly showed that teachers' tacit frameworks can hinder curriculum change. Callahan and Dopico [7] claim that this function is important to recognize in teacher education.

Secondary science teachers' selective traditions were studied by Gyllenpalm, Wickman and Holmgren [27]. The curriculum suggested a more inquiry-oriented approach but, even though the descriptions of the teachers' instructional approaches are varied in the interviews, the knowledge aims are generally similar in that they focus on science subject matter. The selective tradition there was used to describe a teacher's habitual way of conducting inquiries. It is evident that a fact-oriented framework is an obstacle to a more open inquiry. Traditions can also act as barriers to a curriculum supporting ESE teaching when implementing holistic ESD at school [24].

A selective tradition can also be an obstacle to the learning of a science content that is better aligned with the ESE content tested in national tests. Swedish national tests in science include a minimum of 20% socio-scientific issues related to the ESE content. A study of the selective traditions in science teachers' practices and the introduction of national testing show that teachers in the fact-based tradition risk missing important tested content [28]. A selective tradition can also become an obstacle in curriculum change.

#### 5.6. *Showing the Situated and Social Nature of the Existing Selective Traditions*

The concept of selective traditions can function to show the situatedness or context-sensitive nature of teaching. When data are sorted into different categories in empirical research, their variation and complexity are often reduced. This function of the concept shows that teaching is not static and that the teaching context and social peer environment are important.

The complexity of the reality indicates that teachers cannot always be categorized into one selective tradition as it may depend on the teaching context. This was shown in one of the publications, where in the interviews it became apparent that science teachers worked in three different traditions but that they all showed a tendency towards fact-based teaching when describing their practical work [29]. All the teachers focused on teaching scientific facts and skills, and several of them claimed that their conveyance of what was regarded as real knowledge had changed. This result shows that teaching is contextually sensitive and that teaching approaches are not static.

In another publication, a comparison of the results from two studies in which the same teachers participated showed that individual teachers can switch from mainly working within the pluralistic tradition to the fact-based tradition. In the first part of the second study concerning good tasks in national tests [30], science teachers taught the science content according to all three selective traditions [19]. In the second part concerning the teachers' views of what kind of scientific knowledge and abilities students were expected to develop [30], in group discussions, the teachers appeared to work in the fact-based tradition. This result shows the social nature of teaching approaches and that teachers in groups do not emphasize the same selective traditions as they do individually.

#### 5.7. *Promoting Specific Teaching Outcomes*

The concept of selective traditions can function as a theory to promote a specific kind of ESE teaching, most often being the pluralistic teaching tradition. This function highlights the tension between normativity in educational research and practice, and the risk of democratic deficit, which is contradicted between an ESE that tells the student what is right (the normative tradition) and an ESE that aims to provide the student with action competence (the pluralistic tradition). This tension is also related to the needs of the society as contrasted with individuals' emancipation.

In some of the reviewed publications, selective traditions were often used to argue for a specific teaching approach that is suitable for specific reasons. If the long-term purpose of the education is to enhance the development of informed and active young people, conveying factual knowledge is not enough [21]. According to many researchers, ESE could constitute the basis for the development of education for student emancipation and focus on learning in action [10,31]. This means that pupils would need to have educational opportunities to use the knowledge they learn in school in actions outside school [32].

In other publications, the pluralistic tradition embraces democracy [4] and consists of different voices, information, facts and beliefs. In this tradition, values are also important in that they make students aware of the variety of different interests and perspectives. It is important to develop good skills for argumentation in a pluralistic classroom. This is recognized in the international policy debate about ESD that seems to be moving away from a focus on normative behavioral modifications to more democratic pluralistic approaches [33].

## 6. Discussion

This section begins with a discussion about the seven discerned functions of the concept of selective traditions identified in the twenty-four publications in relation to educational philosophy and the ESE research outside the literature included in this systematic review. It continues with discussing the implications of the functions for teacher education and in-service training and gives recommendations for using them in hands-on practice.

### 6.1. The Seven Functions Discussed in Relation to Research Outside This Review Literature

The first function of combining educational philosophy and environmental problems in teaching is useful in discussions about the differences between EE and ESE. The fact-based tradition and the normative tradition are both oriented towards facts and attitudes, whereas the pluralistic tradition is more process-oriented [21,32]. EE teaching is product-oriented in that specific knowledge needs to be learned about how to solve known environmental problems. This can be compared with ESD 1, where the intended learning outcomes are known [14]. The pluralistic tradition makes use of the same educational content, e.g., subject matter, but as a vehicle in the process of developing abilities through discussions and actions for action competence where the solutions for future challenges are open [34,35]. This is comparable with ESD 2, where the solutions for future challenges are still under debate [14].

The second function is analyzing teaching empirically in order to discern which selective traditions are used. The main point about discerning teachers' selective traditions is not to put teachers into different categories. Selective traditions are not static but are situated in the actual teaching context [29,30]. This is important because it indicates that selective traditions can be changed and adjusted. The analysis of teaching approaches contributes to reflective discussions about and possible changes in the teaching. According to Dewey [36], an analysis of teaching does not mean comparing simple behaviors, but rather looking at the more complex approaches developed by teachers' experiences and disciplinary education at university. In this sense, a selective tradition cannot always be explicitly expressed by the teacher but can be discerned through reflection by using an analytical tool (five educational aspects, Figure 1). However, before one can start reflecting on them, it is essential to acknowledge selective traditions as habitual teaching approaches as this will guide one in the search for ways of changing them [37]. The educational aspects [20] can be used by teachers as a reflection tool to discern their own teaching approach [8]. The point is to encourage teachers to start reflecting on their own teaching, preferably together with peers in groups. This type of group reflection by teachers in one subject area or many, in extracurricular collaborations, is a way of developing collaborative ESE teaching [16].

The third function of visualizing longitudinal changes in teaching is important for discerning changes due to a curriculum change or other change pressures on teachers (Sund and Gericke, in review). The identified fact orientation of the teachers' teaching following the latest Swedish curriculum change in 2011 [25] aligns with a Swedish national policy focus on improving the results of PISA surveys which have been decreasing for more than 15 years [30]. The focus of the latest national curriculum is on more easily assessed factual knowledge than open-ended questions or discerning abilities. This is an international phenomenon in the age of measurement [15] and a way of visualizing the entry of neoliberal forces in schools, where almost everything is expected to be measurable [38,39]. This resembles the discussion about EE versus ESD when the United Nations launched the policy process of entering ESD globally [40]. This function also makes researchers and practitioners reflect on what makes their teaching change.

The fourth function of observing the distribution of teaching in collaborations between school subjects is important for developing cross-curricular ESE teaching collaborations. Some teachers are not always happy about this type of collaboration, even though it is promoted in, e.g., the Swedish national curriculum [23]. Most science teachers are rooted in the fact-based selective tradition [8], as Gayford [41] also similarly found. Gayford

further noted that pluralistic thinking seems to be alien to many science teachers as they mostly emphasize the pluralistic tradition [6,42]. This function is threefold in that it can highlight the disciplinary obstacles for collaborations, show the differences in teaching between subject areas in collaborations and indicate how different teaching approaches can complement each other in collaborations. The research has shown that the teaching in different subject areas differs but can together offer students a more comprehensive ESE learning situation [16].

The fifth function of recognizing tacit frameworks—facilitators of and obstacles to teaching outcomes—is important for discerning teachers' conceptual schemes. This has been important in the relation between research and practice. According to Wickman [43], this relationship has historically occurred in three steps: (a) teacher deficit and social engineering, where conceptual schemes are hardly acknowledged, (b) reflecting practitioners, where conceptual schemes aid the choices of already knowledgeable teachers and (c) the mangling of the conceptual schemes by researchers through practice with the purpose of revising research theory. The results of this literature review and study of the concept of selective traditions align with step two, which is close to the didactic model to develop teaching practices and the teaching profession [44]. The authors' experiences are that in discussions with science teachers in in-service training sessions or when teaching student teachers, most teacher groups recognize and are familiar with the concept of selective traditions. Didactic modeling is one way of developing teaching approaches systematically through different models, such as the teaching dimensions of what, how and why by Klafki [45] and curriculum emphases by Roberts [5].

The sixth function showing the situated and social nature of teaching is important for showing how context-sensitive the teaching and selective traditions are. When teachers discussed the importance of practical work in the study by Sund and Wickman [29], they all emphasized the fact-based tradition. This can involve anthropocentric views of nature in excursions and systematically observing the surroundings. Observers are not part of nature, but can be regarded as external observers [46]. Another example of this anthropocentric view is practical work in the laboratory, where nature is manipulated by humans [47]. This function shows that teachers easily embrace certain scientific roles. In one study, when teachers discussed socio-scientific issues in national tests in groups, they all entered into a rational scientific discourse [30]. Östman [48] discovered something similar and explained it as a disciplinary hegemonic discourse that has been common in science teaching since the 17th century. This might look like a historical event, but it can still be a challenge in teacher education. In teacher education, students can often revert to the disciplinary teaching traditions that they learned from others, which can in turn become obstacles in discussions about pluralistic teaching approaches or work in collaborative extracurricular settings [30].

The seventh function of selective traditions is promoting specific teaching outcomes. The promotion can be about developing a more democratic teaching that supports students' development of emancipation and action competence [49–51]. Theoretical discussions inspired by John Dewey [52] concern important aspects of teaching, such as democracy [11,15,53]. The normative tradition is democratically questionable [4]. The democratic participatory approach is a prerequisite for developing pupils' action competences [34]. In teaching practice, research and at the policy level for global development, the learning outcomes of EE/ESD/ESE have increasingly been translated into a number of competences for sustainable development, e.g., critical thinking, collaborative decision-making, future scenario skills and action competence [54]. The underlying educational idea is to empower young people by developing key competencies. Key competencies are something to achieve, whereas action competence is an ongoing teaching approach that encourages pupils to use the knowledge and abilities they have learned at school to guide their actions. Action competence is an educational ideal [34]. Promotion of developed action competence teaching enables pupils to deal with the often-complex societal challenges of sustainable development [35].

## 6.2. Implications for Teacher Education and in-Service Training

The first question to confront Callahan and Dopico [7] when reading about selective traditions was, “Do teachers teach in the same way as they were taught?” If this is the case, we need to analyze the selective traditions that were prevalent when they were studying to become teachers. This is an example of requested further research on selective traditions. Knowing how student teachers are trained in teacher education courses can help us to understand more about how our children will learn about global developmental challenges in the future. The second question for Callahan and Dopico [7] was, “Which part of our teaching is canonical and which is personal input or contributes to the development of universal knowledge?” Learning a discipline is one thing, but teaching it is another. The teachers’ disciplinary traditions meet the pupils’ everyday knowledge in the classroom. The canonical parts of the discipline meet a transformed school science in the textbooks [55].

It would be fruitful if teacher education institutions could visualize and discuss selective traditions and show how they can work as tacit frameworks for student teachers learning when becoming teachers and also as obstacles to change in school [43,55]. An important question to start asking in teacher education is, “What is new in this curriculum compared to my everyday teaching?” The answer might be a slightly different way of teaching a subject and align towards a selective tradition different from the current practice.

The seven functions of the concept of selective traditions discerned in this review can contribute to a better understanding of how more emancipating, democratic and transforming ESE teaching can be developed. The functions illuminate important qualitative discussions when teaching is developed systematically. Five of the functions are useful in the practice-oriented hands-on development of ESE teaching in teacher education and in-service training, while the other two functions (visualizing and observing) are useful for observing the changes in and distribution of ESE teaching at a school, national and international level.

These functions can be used to develop the teachers’ teaching and the learners’ learning of skills in alignment with the needs globally. The United Nations Sustainable Development Goals (SDGs) set an agenda for action to contribute to effectively improving life on our shared planet. In effect, they set a policy direction aiming for significant improvements by 2030 [56,57]. Goal 4 attends to the need for quality education for all, and target 4.7 requires that all learners acquire the knowledge and skills needed to promote sustainable development, including explicit education for sustainable development.

## 7. Conclusions

Discussions about how a transformation of teaching occurs (or not) begin with educational philosophies, the root causes of developmental challenges, rational discourses, disciplinary traditions, curriculum changes, external pressures and market forces, all of which are essential for systematic and democratic changes in ESE teaching. Research on the concept of selective traditions has shown that there are many functions to consider when discussing and analyzing ESE teaching for the future in research and practice, as outlined in this review. The seven functions of the selective traditions identified in this study can be a valuable contribution in this endeavor to develop and analyze ESE teaching locally as well as globally in alignment with the SDGs.

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# A Didactic Model of Sustainability Commitment

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**Abstract:** This article proposes a model that describes and frames sustainability commitment. The model is based on didactic theory and pragmatic philosophy and is informed by several empirical studies on environmental and sustainability education (ESE) practice. The intention is for the model to serve as a critical perspective on ESE practices in secondary and upper secondary schools, and to offer a framework for the development of future practice with emphasis on teachers' choices of content and teaching methods. The model suggests that a sound commitment is situated in the intersection of the intellectual, emotional, and practical aspects of sustainability. It is argued that: The intellectual aspect is essential for giving the commitment scientific rigor and a critical stance; emotions are vital for students to become dedicated; and skills to carry out appropriate actions for change is necessary for playing an active role in providing a sustainable transformation of society.

**Keywords:** education; didactics; teaching; learning; pragmatism; sustainability commitment

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## 1. Introduction

From the Agenda 21 plan of action to the adoption of the 2030 Agenda for Sustainable Development there has been an international policy aspiration to reorient and implement education towards sustainable development. The broader Sustainable Development Goal (SDG) 4 (quality education), and specifically SDG 4.7: "By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through Education for Sustainable Development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and nonviolence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development" [1] (p. 8), give added impetus to the sustainability themes that have emerged in various educational policy papers published at the national level, particularly in Western Europe/the global North.

The inclusion of sustainability themes in educational policy also raises questions about educational and teaching goals and choices of content, forms, and methods. In recent decades schools all over the world have been addressing this challenge [2]. Depending on country, environmental and sustainability education (ESE) can be a subject, an aspect of civics or of citizenship education, or a broader cross-curricular theme. Exploring the relationship between education and sustainable development, Vare and Scott [3] have emphasized the importance of seeing sustainable development as a social learning process (as opposed to a set of pre-determined behaviors), which concerns the building of capacity to think critically about and explore the dilemmas and contradictions inherent in sustainable transformation. Scott [4] argues that building this capacity is a central aim of schools:

In terms of sustainability, then, the purpose of schools might be seen as stimulating young people's development of awareness and interest in relation to living sustainably with the hope (but not certainty) that this will give rise to social participation that can contribute, for example, to the goals of greater social justice and human well-being, and the bolstering of the resilience of ecological systems (p. 413).

In this article, we refer to Scott's suggestion of the purpose of schools as supporting the creation of students' *sustainability commitment*. By sustainability commitment we mean a desire and ability to contribute to a sustainable transformation of our world. The question is, what is the content and structure of a commitment to sustainable development? What can be considered to be an ethically and politically sound commitment? How might teachers support the development of such a commitment? The purpose of this article is to suggest a model that describes and frames sustainability commitment and tentatively answers these questions. The intention is for the model to provide critical perspective on ESE practices in secondary and upper secondary schools that will serve as a framework for the development of future practice with emphasis on teachers' choices of content and methods when teaching on sustainability issues.

The model is based on Nordic and German didactic theory [5] and John Dewey's pragmatic philosophy [6–11] and is the result of years of empirical study conducted by the research group SMED (Studies of Meaning-making in Educational Discourses) (for an overview of this research see [12,13]). In this article, we use empirical examples collected from a recent research project called "Teaching global equity and justice issues through a critical lens" (Swedish Research Council, project number 2017-03468) to illustrate the different aspects of the model and the related teacher actions.

## 2. Background: Key Competencies and Action Competence

We begin by reviewing earlier significant research and different attempts to define the content and structure of sustainability awareness and interest. The focus is on two specific areas of research: key competencies and action competence.

In numerous articles and reports, the strategy to address the sustainability challenge has been translated into interconnecting and associated combinations of key competencies for sustainable development [14–17]. Key competencies are described as critical reference points for developing curricula and courses [17] and "the ambitious knowledge and skill profile of students expected to be future 'problem solvers,' 'change agents,' and 'transition managers'" [16] (p. 204). At the policy level, and based on (among other references) the above research, UNESCO has identified eight cross-cutting key competencies for sustainability that are of particular importance for thinking and acting in favor of and advancing sustainable development: systems thinking competency, anticipatory competency, normative competency, strategic competency, collaboration competency, critical thinking competency, self-awareness competency and integrated problem-solving competency [1] (p. 10). Rieckmann [18] also provides an overview of some of the competences that are needed to deal with sustainability challenges. Key competencies are essential for individuals to become "sustainability citizens" [19] and are what active and critical sustainability citizens will need in order to deal with complexity and uncertainty, design strategies to address these aspects and, perhaps most importantly, change their own lifestyles to reflect a more sustainable and just society [1,20] and open the door to sustainable development. The key competencies are also useful when constructing educational programs on sustainable development (a broader end) and describing what students will need to live sustainably (output).

However, there is also substantial critique towards key competencies as an educational concept (for an overview of this critique see [21]). Willbergh [21] argues that that "the term loses its meaning when implemented into practice and simply designates performance and skills" (p. 336). Key competencies are based on the idea that we can predict what is needed in the future. However, assessing competencies of the future is very difficult and there is a problem with competence as an educational concept as it assumes that what is judged to be keys to success today will be context-independent and stable [21]. Furthermore, the problem is that there is still no agreement as to what key competences in general really are [14], which is important when it comes to identifying context-specific key competencies for sustainability. There is a lack of theoretical anchoring and empirical evidence to show which competencies are crucial and sufficient for living sustainably, or that enable students

to take part in sustainability problem-solving. Furthermore, these core competencies have not been the main focus of formal education [18] (p. 45). Although the Global Action Program (GAP) aims to expand and mainstream Education for Sustainable Development (ESD) at all levels and in all areas of education, we know very little about competencies that are essential for sustainability in formal education and how they are connected to teaching–learning relationships. Key competencies also focus on a specific goal or learning outcomes in the form of capacities and skills [16,18], rather than on the learning process and the educational content. Another question concerns the implementation of competence orientation and how to incorporate it into the teaching practice; something that is hampered by didactic challenges such as how to move the focus from the “what competencies” question to that of “how can concrete competencies be fostered?” [22] (p. 9). Thus, although the key competence concept has been valuable at the program level, it gives teachers little guidance when it comes to organizing classroom practice.

More oriented towards teaching and learning is the concept of action competence [23,24]. As noted by the Danish researchers who coined the phrase “action competence” as an educational concept, there is an important difference between viewing “competence” as a countable word with plural forms (outcomes that include certain core competencies) and “competence” as an educational philosophical ideal associated with “being able, and willing, to be a qualified participant” [23] (p. 473). An action competence approach is skeptical of educational paradigms in environmental and sustainability education that regard the educational task as a question of behavior modification: “Through the spectacles of action competence, you may look for and ask for and measure different (key) competencies, but action competence will not be one of them. Action competence will be the lens that makes some types of knowledge, skills, qualifications, competencies, abilities, and action readiness more educationally important and valuable than others” [23] (p. 67). Some researchers [4,23,24] argue that there is a need for a form of teaching that focuses on the development of critical thinking skills, dialogue and debate (naturally integrated into the focus on content) and on how students “acquire the courage, commitment and desire to get involved in the social interests concerning these subjects (naturally based on understanding and insight)” [23] (p. 472).

In keeping with Jensen and Schnack [23], we relate commitment to students’ motivation and assertiveness, both of which are crucial for turning knowledge about sustainability problems/issues into action. A sustainable commitment is situated and personal at the same time, in that it needs to be relational and informed by a social context. It is, therefore, an ongoing commitment over time. Compared to the key competencies for sustainability, a commitment speaks back to you, in the sense that you want to do something. However, in a sound commitment this desire to act must, as Jensen and Schnack [23] put it, be “based on understanding and insight” (p. 472). To be more precise, we argue that it needs to be based on scientific knowledge and ethical and political insights.

Action competence is now receiving more scholarly attention, particularly in the context of interpreting the concept as a latent competence or as an overarching educational approach. To redefine action competence, Sass, Boeve-de Pauw, Olsson, Gericke, De Maeyer and Van Petegem [25] break down action competence into “the willingness, commitment, knowledge, skills and confidence to engage in finding solutions to controversial problems or issues” (p. 6). The authors offer an overview and current usage of the concept of action competence in sustainable development research and undertake a critical discussion of how the term can be seen as the “competence of people to engage in solving sustainability issues” (p. 1). We see this attempt as an interesting way of theoretically conceptualizing competence and believe that by empirically engaging the theoretical perspective with classroom practice and building a model on didactic theory we can add another layer to the knowledge/aspect of approaching ESE from a competence point of view, i.e., in order to incorporate sustainability commitment into teaching practice, we need to add an idea about the content, the different components and aspects of such a commitment, and a theory about how students make this content their own. To develop a model for this, we

turn to John Dewey's educative view of experience and Klafki's didactic theory on how the content "becomes something" in the educational situation.

### 3. Research Process

The study relies on two theoretical perspectives—didactics and pragmatism—both providing complex and comprehensive understandings of teaching practice and students' learning. The suggested didactic model of sustainability commitment has been developed through abduction or retroduction [26,27], where the theoretical explanations have been tested against empirical data material in a back and forth process. According to Charles Sanders Peirce [27], the term abduction originates from a misunderstanding and a mistranslation and should instead be called retroduction (see CP 1.65). Building on and interpreting Peirce's work, Glynos and Howarth [28] explain that retroductive reasoning generates a new standard of explanation and captures the process by which a researcher adopts hypotheses and constructs theories. Retroductive reasoning starts with studying the facts (observations derived from experience) and devising a plausible conjecture or hypothesis (theory) to explain them. As Peirce [27] puts it: "abduction, although it is very little hampered by logical rules, nevertheless is logical inference, asserting its conclusion only problematically or conjecturally, it is true, but nevertheless having a perfectly definite logical form" (CP 5.188, p. 3794). Using the retroductive method, we seek to build theory from practice, or as described by Walsh [29], "theorizing from and with praxis" (p. 84), to contribute a praxis point of view to empirically engage the theoretical perspective with classroom practice.

### 4. Theoretical Perspectives

In the following, we present the two theoretical perspectives that have guided the retroductive process: Nordic and German didactic theory (Didaktik) and John Dewey's pragmatic theory on experience. We outline the basic ideas of these perspectives that have influenced the development of the model of sustainability commitment.

#### 4.1. *Didaktik: The Question of Educational Content*

Nordic and German didactic theory encompasses general ideas about the role and purpose of schools in society and that which directly affects the teaching process. One way of structuring an understanding of Didaktik is to start from the three main questions in education: why?—the motives of education, what?—the content of education and how?—the methods used in education [30].

At a societal level, the why question addresses the purpose of schools and the visions of an ideal society. It also considers the role of the school in preparing students for life in a democracy/democratic processes. The what question concerns the standards on which to base the choice of content and the grounds on which a certain material is chosen. Even in a fixed and compulsory curriculum, teachers have a significant amount of freedom to decide which content to use. The question therefore is, which central and important content should be selected and presented in each case in the frames and circumstances set by society and the school? The how question also concerns how to structure, organize, and present the content. The how question deals with the choice of work methods and approaches. It also emphasizes how students can achieve the goals that have been set for the education, which includes an understanding of the learning process that takes place when teachers and students mutually enact the content, and how the role of the teacher is perceived.

In the Nordic and German Didaktik tradition, the what question about the educational content is particularly important. As we see it, the strength of this tradition is that it problematizes how teaching can unlock the educational potential of a given content and allow students to turn matter into meaning [31,32]. In this tradition, the curriculum outlines a certain content for the teaching, but is not seen as something that explicitly direct a teacher's work. Rather, the curriculum is viewed as something "that can only become educative

when interpreted and given life by teachers” [33] (p. 177). According to Hudson [33], this tradition emphasizes that teachers can exercise substantial professional autonomy and have the freedom to teach without the control of a curriculum. Thus, didactic considerations include what a teacher needs to respond to and how to create the conditions required for students’ learning. To select educational content, the renowned German didactic theorist Wolfgang Klafki suggests five basic questions of “didactic analysis” [5,34,35]. These mutually dependent questions represent the basis for selecting and working with the content of a teacher’s daily lessons. The first question focuses on exemplarity: “What wider or general sense or reality does this content exemplify and open up to the learner?” The second question is aimed at the meaning and contemporary significance of the content for the students in the class. With the third question, Klafki asks about the future meaning of the content. After having pedagogically placed the content in the context of its educational potential regarding the exemplary, present and future relevance for the student (questions 1-3), Klafki turns to the fourth question about the wider context of this content and how it can be broken down. Finally, the fifth question focuses on accessibility and how the content can become interesting and approachable: “What is the body of knowledge which must be retained (“minimum knowledge”) if the content determined by these questions is to be considered “acquired”, as a “vital”, “working” human possession?” [34].

A crucial aspect of content is the difference that Klafki makes between matter and meaning, which means the content as such (*Inhalt*) and its educational substance (*Gehalt*). Hopmann [31] emphasizes that this difference is not simply one of facts and beliefs: “they are what they are by the substance meeting the teacher and the student while meeting the content” (p. 116). He continues by saying that “meaning is what emerges when the content is enacted in a classroom based on the methodological decisions of a teacher, i.e., his or her pedagogical freedom” (p. 117). What Klafki’s didactic perspective contributes is how the content becomes something in the educational situation and when students actually learn it. This is close to pragmatists’ claim that the meaning of concepts must be brought out or “cashed out” in experiential terms and consequences (see below). William James [36] (Lecture 2) used cash-value metaphorically to describe that a meaningful concept must be related to empirical observations: “You must bring out of each word its practical cash-value, set it at work within the stream of your experience.” This means that a teacher selecting the content must consider and critically analyze the meanings that students create and how it might help them to achieve “the abilities of self-determination, co-determination and solidarity” [34] (p. 14). Klafki understands knowledge as situated, contextual and normative and his development of a critical perspective is infused with a focus on reacting to social conditions and processes that work against a more just society.

Klafki’s ideas about how content can become accessible to and approachable for students is of central importance for the suggested sustainability commitment model. We would also like to add how the content can become actionable, defined as having practical value for the students to act on [37]. We understand the concept of commitment as being in line with the didactic concept of *Bildung* and the way in which teaching “opens up a world for the student, thus opening the student for the world” [31] (p. 115). In contrast to a key competence approach which is built on anticipated skills for the future, the *Bildung* concept focuses on engaging with students to understand what matters to them and their future and ethical choices. Willbergh [21] argues that the educational idea of *Bildung* is to support student independence, so that “the younger generations themselves will be able to decide in the future what they consider to be useful, successful and last but not least, ethical” (p. 341).

To unfold what it means in terms of students’ learning to open up for the world and take responsibility for the future, we turn to John Dewey’s pragmatic philosophy and especially his concept of experience.

#### 4.2. Pragmatism: Experience and Relationality

In developing our didactic model of sustainability commitment, Dewey's notion of experience as indispensable to all learning is essential [11]. It is through the process of experience that we learn to (practically, emotionally and intellectually) navigate our course as individuals and as a pluralistic society.

Dewey [11] describes experience as an interplay that involves the interaction between objective conditions (equipment, books, materials including "what is done by the educator and the way in which it is done", p. 45) and the student's internal conditions (previous experiences manifested as acquired habits). It is by acting and undergoing the consequences of our actions in a specific situation that we develop an understanding or grasp the meaning of the situation, or to use Dewey's words, "to see it in its relations to other things: to note how it operates or functions, what consequences follow from it, what causes it can be put to" [9] (p. 225). Thus, knowledge is intimately connected with action, or the happening of experienced things. As Dewey [7] explains: "to discover the conditions and consequences of [experience] happening/ . . . /can take place only by modifying the given qualities in such ways that relations become manifest" (p. 84). We can therefore understand these manifested relations as practical, emotional, and intellectual aspects of our habits.

According to Dewey [11], every (genuine) experience modifies us, and in a sense, "the world". When individuals live through a learning experience, they are not only actors of the world, but are also receptive to and undergo the world, and thus need to be able to question and change previous habits of acting, feeling and thinking: "For 'taking in' in any vital experience is something more than placing something on the top of consciousness over what was previously known. It involves reconstruction which may be painful" [10] (p. 41).

This experiential understanding of learning means that student learning is not an invisible mental process that is carried in the head, but something that is in the practices or situations in which the students are involved and respond to through action. For the teacher, choosing the situations in which this interaction takes place and considering the whole learning environment to adapt to the needs of the student group is an important task. For Dewey [11], this means that the teacher is the one with "the greater maturity of experience" and who therefore needs to organize and evaluate the direction in which the students' experiences are heading ("what it moves toward and into") (p. 38).

From Dewey's pragmatic perspective, a complete and entire learning process (experience) consists of a series of overlapping elements or aspects, where disciplinary knowledge is not sufficient to reach a situation that involves concern for someone or something: "It is not possible to divide in a vital experience the practical, emotional, and intellectual from one another and to set the properties of one over against the characteristics of the others. The *emotional* phase binds parts together into a single whole; *'intellectual'* simply names the fact that the experience has meaning; *'practical'* indicates that the organism is interacting with events and objects which surround it." [10] (p. 55, our emphasis).

According to Dewey, an experience has a unity that is constituted by a quality that pervades the entire experience. The existence of unity is not strictly emotional, practical, or intellectual, as these distinctions are made in hindsight, by way of reflection. Furthermore, the experience is not the sum of these different characters: "They are phases, emotionally and practically distinguished, of a developing underlying quality; they are its moving variations, not separate and independent" [10] (p. 37).

Following Dewey, and to sum up, the intellectual, emotional, and practical aspects represent different phases or aspects of human nature. The intellectual aspect represents rationality, understanding, reason, responsibility etc., the emotional aspect represents sensibility, emotion, spontaneity, devotion etc., and the practical aspect indicates "our dealings with things" [10] (p. 193), events and objects that surround us. There is no intrinsic (psychological) division between these aspects of experience, but for didactic reasons it is often fruitful to make an analytical distinction between the practical, emotional,

and intellectual—and it is this that constitutes the core of our model for sustainability commitment.

## 5. Empirical Input

The empirical input for the development of the suggested didactic model is based on several projects and studies of ESE practices in secondary schools (See for example: [38–44]). In this article, we specifically use empirical examples collected from a recent research project called “Teaching global equity and justice issues through a critical lens” (Swedish Research Council, project number 2017-03468) to illustrate the model and make it more comprehensible and tangible. This project examined how Swedish upper secondary school teachers take up the most pressing sustainability problems facing the world today in their teaching practices, such as migration, climate change, and social and economic inequalities. The empirical examples are gathered from the classroom observations and interviews with teachers and students. They allow us to illustrate what the different aspects might look like in educational practice and how teachers guide students’ inquiries in relation to the different aspects of a sustainability commitment. It is important to stress that the empirical data does not say anything about a sustainability commitment per se, but focuses on teaching and learning processes. However, the data exemplifies how commitment may emerge and how teachers can support this in educational practice. Since data is used only to illustrate our argument, we leave out the full details of the research design of the project. Nor do we detail the larger data set which includes transcripts of the interactions between teachers and their student groups.

## 6. A Didactic Model of Sustainability Commitment

Based on the empirical studies, didactic theory and Dewey’s ideas about experience and learning outlined above, we argue that a commitment should consist of three inter-related aspects: an intellectual aspect, an emotional aspect, and a practical aspect. For students to develop a sound sustainability commitment, it is important that they are presented with a variety of learning experiences that will help them to:

- acquire knowledge about sustainability issues and relate (position/locate themselves) to that knowledge (the intellectual aspect),
- articulate their emotional response and emotionally relate to sustainability issues (their ethical standards and beliefs) (the emotional aspect),
- develop their ability, motivation and desire to play an active role in finding democratic solutions to sustainability issues (the practical aspect).

The basic components and structure of this sustainability commitment model are presented in Figure 1. In the following, we describe the different aspects of the model and the related didactic principles in more detail. Although for reasons of clarity we describe the aspects separately, it is important to underline that it is the reciprocal relationship between these aspects that forms the conditions for a sustainability commitment based on scientific knowledge and ethical and political insights. In this way, we could say that a sound sustainability commitment lies at the intersection of the intellectual, emotional, and practical.

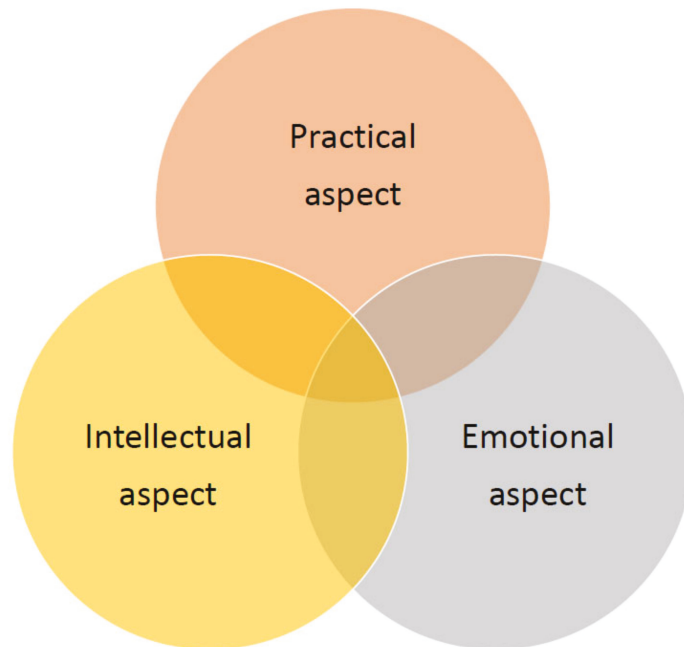
### 6.1. The Intellectual Aspect

The intellectual aspect of sustainability commitment is in two parts: (a) students’ rational knowledge about sustainability issues and (b) students’ own relationship to this knowledge in terms of their epistemic, ethical, and political position or location.

Every school subject has content knowledge or disciplinary knowledge that students are expected to learn. The process of selecting and introducing subject content is a fundamental aspect of teaching sustainability issues. It is reasonable to stress that some of this knowledge involves understanding nature and the biosphere (i.e., ecosystem services, biodiversity, and the carbon cycle). Essential knowledge arguably also concerns



the relationships between humanity and the biosphere (i.e., poverty reduction, economic development, and climate change).



**Figure 1.** Aspects of a sustainability commitment.

Choosing teaching content (“facts”) is not a value neutral process, as the selection of facts and descriptions of the world always involve value judgements [45]. Teaching content is not just a matter of which knowledge should be learned, but also includes paying attention to the values that accompany the subject content, the teaching methods that will be used and the teachers’ aims (the “companion meanings”) [46,47]. An important principle for the choice of content is that facts, examples, and resources should be obtained from various sources. Another is that teachers’ choices of the “what” content should include a critical perspective or standpoint in the sustainability learning process. Although we acknowledge the insights into the development of a critical perspective on the teaching content that Klafki has offered, we also want to draw attention to postcolonial and decolonial perspectives as critical modes that can illuminate the ethical principle of responsibility for others and offer alternative perspectives on international development by challenging ethnocentrism and addressing issues of complicity [48–50]. Other examples are post-humanist perspectives that stress humans’ complicity in the significant damage to ecosystems, ethical relations with more than human beings [51–53] and critical materialist perspectives that take the historical and critical commitments of environmental education seriously [54]. Perspectives such as these can help teachers and educators to go deeper into the causes and roots of events and engage students in thoughtful communication, thus opening up the possibility for a praxis that supports an ethical and complex approach to the teaching of sustainability issues and evokes new questions and possible responses (e.g., what is emphasized and what is marginalized?). A critical perspective can also be a useful tool in the process of choosing teaching content that will help teachers to identify the kind of knowledge and skills that will enable students to make important choices for sustainable transformation.

However, knowing about the world is not enough. Students also need to relate to/position themselves to this knowledge and consider their role in a sustainable future [55]. This can find expression in epistemic, ethical, and political ways. The epistemic way means knowledge about how the students' own lives are connected to the world, what they depend on and how they influence the world (i.e., consumption, ecological footprint). Ethical ways of relating to the knowledge gained include adopting different ethical principles and ideas about rights and obligations, as well as rational thinking and standpoints concerning good values and right actions, i.e., the morally right way of living your life (including questions about the intrinsic value of biodiversity, the rights of future generations, obligations to people in other parts of the world etc.). Students also need to position themselves politically in relation to the knowledge they have learned and reflect on different conflicting ideas about a just and equal society (i.e., a socially just allocation of natural resources, democratic decision-making, and distribution of power).

From a Deweyan perspective, an intellectual aspect can be considered to be a "rational phase of reflective inquiry" [6] (p. 209), i.e., reflective inquiry as a kind of thinking. However, that does not create a genuine engagement unless students also have opportunities to emotionally grapple with sustainability problems and relate them to their own lives.

### 6.2. *The Emotional Aspect*

Dewey [10] argues that in a vital and living experience emotions are not just things that happen to us, but that they actually play an important role in our lives and in rational thinking. Students' emotional responses to disciplinary knowledge and their relations to sustainability issues are crucial for a deeper commitment to and understanding of how sustainability issues relate to them personally. Students' emotional responses can be of a political nature (relating the future organization of a just and equal society/world) or moral nature (relating to responsible and caring relationships between humans or between humans and animals/plants/ecosystems).

Several researchers in the ESE field have highlighted the importance of emotions as a moving force and that reason (knowledge) and emotion are mutual and inseparable when learning about sustainability issues [56–61]. Hicks and Bord [57] hold that an emotional response "appears to occur when knowing shifts from being something intellectual and detached to a personal and connected knowing./ . . . /Most importantly the emotional responses experienced by students need to be accepted and seen as part of a shared experience" (415f.). Similarly, Ojala [58,59] maintains that learning about sustainability problems affects and stirs up emotions and that this is not something that teachers should try to get rid of or try to "change". Drawing on earlier research in the field, Ojala [59] cautions against trying to steer students' emotions and categorize them as right or wrong, because that can turn education into indoctrination [60,62]. A crucial point that Ojala makes, and that is applicable to a sustainability commitment, is that emotions are not the enemy of reason but rather an important part of it. Of course, negative emotions such as denial of the seriousness of climate change can be negatively related to engagement [63]. However, other negative emotions, such as worrying about climate change and worsening inequality, can actually be a driving force for critically reflecting on, discussing and perhaps challenging some of our assumptions about the way we live and the way we interact with each other and the environment. Thus, worry can be a first step towards a wider public interest. Consequently, as teachers we need to raise awareness of emotion regulation strategies that promote students' critical awareness and engagement, respond to their feelings and worries and constructively try to handle and cope with emotions [59]. Equally, it is important to promote students' critical emotional competence that also acknowledges structural and cultural factors. For example, treating emotions and coping strategies as entirely private affairs might counteract the transition towards a more sustainable society. As Ojala [59] argues, a strongly individualized approach to emotions prevents young people from developing a critical and alternative view of society.

Drawing on Todd [64] and Mouffe [65], Sund and Öhman [60] have argued for the importance of dealing with conflicts passionately in ESE, given that emotions are key “drivers” for creating relations to the world and taking a political stand for or against something. They also conclude that our values and principles continuously change in relation to specific and situated contexts. Following Todd [64], they claim that this change is provoked by others in all their differences and is a potential source of new thought. In their empirical case study, Håkansson and Östman [56] also show how affection can be transformed into political emotions in teaching and learning settings and form the basis of an inquiry leading to political meaning-making.

Emotions in the form of moral reactions can also be grounds for ethical reflection. The teaching content itself can evoke a spontaneous moral response, but “it can also be the case that the teacher deliberately wants to provoke a moral experience, for example, by showing a movie or reading a text which concerns the students and arouse their emotional responses” [66] (p. 98). To start teaching concrete cases based on students’ moral experiences connects to Dewey’s view of morality as lived practice and contextual [67]. What is experienced depends on what we bring to a situation. Habits and ways of life determine how we (inter)act in a situation and coordinate our actions with others: “The emotional aspects of experience are always the result of a transaction between the organism and the environment. Emotional appreciation is about something that in a situation is experienced as having certain qualities” [67] (p. 223). Thus, morality arises and takes shape in relation to others, and here emotions can have an important function.

### 6.3. The Practical Aspect

Knowledge and emotions are not much use when it comes to a sustainable transformation if you do not know how to act. The third aspect of our model for a sustainable commitment is therefore the practical and focuses on students’ actions and action competencies. Sustainable Development Goal 4.7 points to the important responsibility of schools to develop students’ abilities to play an active part in the transformation towards a sustainable society. In this transformation, and as mentioned previously, what kind of knowledge will be needed is by no means obvious. Therefore, students need to be given an active role as producers of knowledge and teachers in turn need to help them to develop their abilities and desires to play an active role in this transformation. Knowing how to act and being able to act are essential components of a sustainability commitment. Transformative actions can be moral (actions at the individual level, such as saving electricity and water by changing your lifestyle) or political (actions that relate to societal change, e.g., writing an email to a politician). Furthermore, actions can be deliberative (discussing and affecting), practical (sorting waste), or innovative (starting an environmental group).

The practical aspect connects to the foregoing discussion of a pragmatic understanding of experience and Dewey’s view of action as a crucial part of knowledge, rather than something that is passively perceived [8,68]. As explained by Dewey [10], we encounter others in “our dealings with things”, through actions and their consequences. Therefore, in the suggested model we depart from the view that students learn in and through their interactions with their environment.

As already indicated, action competence has been a concept in the ESE field since the 1980s. This approach points to teaching “that can help students develop their ability, motivation and desire to play an active role in finding democratic solutions to sustainability issues” (cf. [23,24]) (p. 62). A key notion in this concept is the difference between “activity” and “action”, where an action is focused on solutions to a problem and has a perspective that directly enacts change. Mogensen and Schnack [24] also underline the importance of considering the educational significance of the objective content of the actions, the circumstances to which the actions are addressed, and that actions (as distinct from activities) are qualified by the intentions of the agent and by being conscious and purposive.

Furthermore, Mogensen and Schnack [24] argue that the notion of action in action competence has philosophical and educational significance. Action competence refers to

an educational ideal and is thus closely “linked to democratic, political education and to a radical version of the notion of ‘*Bildung*’” [24] (p. 60). The democratic perspective implies that the concept is not context defined, in the sense that it points towards specific actions or visions for a sustainable future. Nonetheless, it is prescriptive in that it relates to issues in an impartial and critically responsible manner and bases our actions on the possible and relevant answers we find—thus supporting open-ended and pluralistic forms of education. We regard the practical aspect to be in line with this definition.

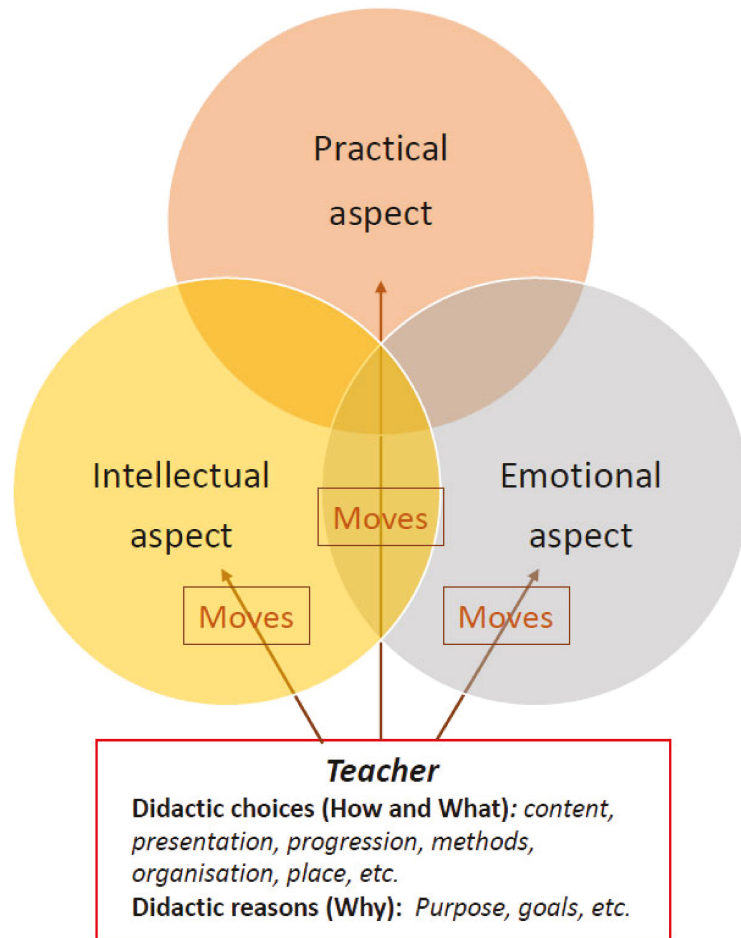
## 7. The Role of the Teacher: Teacher Moves

Teachers play an essential role in students’ development of a critical understanding of sustainability issues and, ultimately, in their awareness and interest in relation to living sustainably. As Dewey [11] claims: “Teachers are the agents through which knowledge and skills are communicated and rules of conduct enforced” (p.18). The task of the teacher is to select and present a certain content (*Inhalt*) and to guide, direct and navigate students’ inquiries so that they make the content their own (*Gehalt*). In didactic theory, the teacher is seen as an autonomous reflective practitioner, where the curriculum constitutes the frame for the teacher’s choices [42]. This means that “Teachers should not just be able to choose and practice appropriate methods to teach a certain given content but also be able to understand which content should be selected within the frames given by society and the circumstances set by their school and their students” [69] (p. 146).

Teachers’ didactic choices can be understood as teacher moves [70]. Teacher moves are the different actions that a teacher carries out to create a learning environment for the students. These moves relate to teachers’ didactic choices of content and methods and their didactic reasoning. The moves can basically be of two kinds: staging an inquiry (the actions that teachers make to encourage the students’ own activities and to initiate an inquiry process) and scene-setting (teachers’ actions that guide, direct, and navigate students in ongoing inquiry processes).

Thus, a teacher’s role in the development of a sound commitment can be understood as staging and scene-setting moves that are directed towards the intellectual, emotional, and practical aspects of sustainability commitment (see Figure 2). This relates to the choices that teachers make in their planning and the actions they carry out in the classroom in their direct interactions with students. It is difficult to overestimate the importance of the teacher in the organizing of the conditions that will enhance the students’ experiences (and the subject-matter of the study). Teachers are crucial for creating a balance between the different aspects of commitment and for challenging the students to deepen their standpoints and arguments [71,72].

Even though we frame these moves as stemming from the teacher, it is important to highlight that they are relational and dynamic, which means that the moves are not isolated actions in relation to the students’ actions. What teachers do in their classrooms (their moves) should in this sense be understood in relation to their didactical choices and the students’ responses and answers to the teachers’ moves (we refer to this as reflective interaction between participants, teachers, and students). The literature on teacher professionalism points out that a key aspect of being a professional is being able to act from certain aims in relation to the specific context in which one acts [73,74]. This is one of the reasons why we think it is important to illustrate the moves as stemming from the teacher—the teacher has some didactical aims with the lesson, while at the same time the particular meaning and the specific routes the moves take are dependent on the students’ actions and responses. Thus, the moves should be understood as context dependent.



**Figure 2.** Teachers' moves in relation to students' sustainability commitment.

## 8. Empirical Illustrations: Teaching for a Sustainability Commitment

In this section, we use empirical examples to illustrate the different aspects of the suggested model and their associated processes. These empirical illustrations are meant to highlight how teachers work towards supporting the creation of students' sustainability commitment in their practice. It should be noted, however, that not all teachers are equally able to develop such skills, nor equally motivated to develop competence in their students. The varying quality and conviction of individual teachers is not addressed here, but we demonstrate how teachers can encourage their students and set the scene for their inquiries in relation to the various aspects of a sustainability commitment. Rather than ideals these examples show what teachers do in everyday teaching situations.

### 8.1. The Intellectual Aspect in Practice

This first example shows how a teacher encourages the development of the intellectual aspect of her students' sustainability commitment (Box 1). In this lesson, the students (year 11) are given the opportunity to explore the document entitled The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) in a global politics course. During the lesson, the students are encouraged to identify conflicts relating to this declaration,

discuss different arguments and state their own standpoints. As preparation, the teacher, Alice, posted UNDRIP's 46 articles on the school's web portal together with a news article explaining the fact that four countries first voted to oppose the resolution but later adopted it. The lesson begins with Alice reminding the students that four countries voted against the declaration: "And their claim was that this threatened their national sovereignty. So, I want to see if you can argue for their case. So, four countries voted no to this declaration. Which countries were they? Does it have anything to do with the colonial past?" She then reads the news article out to the class and tells the students: "So, I want you to try to map out what the conflict is./ ... /Which articles are problematic or ... spark conflicts? And discuss the pros and cons." The students then discuss how they can best map out the conflicts and find that two of the Articles in the Declaration have been criticized (Articles 26 and 28). At the end of the lesson Alice returns to the question of conflict:

**Box 1.** Example of the intellectual aspect in practice.

**Alice:** Alright folks. OK. What is the conflict about do you think? What is the conflict?

**Duha:** The indigenous people are not getting what they deserve.

**Alice:** Mm. Discrimination. And this is true. I mean, if you look at this population in comparison to the general population, generally speaking, indigenous peoples have a lower life expectancy, poorer health ... don't have equal access to health care, or education. They are marginalized in many, many ways, which is true.

**Elaine:** But I guess the problem is that ... I think they want to compensate the indigenous people, but then who decides what kind of compensation is right, how much, and to who? Like who is ...

**Alice:** Yes. *Who are the indigenous people?* We were talking about it here in this classroom. What does it really mean?

**Elaine:** Who is supposed to get compensation? And also, if they want their land back then they're asking the US to take land from someone else and give it back to them. Basically, they are saying that what they did a long time ago was wrong. So, it's a little bit like ... I understand *why* they should have that land, but as it was so long ago, it's also a little bit ... Like you can't really punish me for what my grandfather did. But I'm not saying that they shouldn't be compensated. Obviously, they should.

**Alice:** Mm. But the problem here is ... We will come to that when we get to the individual articles. Have I overlooked any of the points that you addressed? Like, can you punish landowners today for the sins of the past? Whose land is it? Can you take land and say "OK, you guys, you don't have enough, you guys have enough?" Who are the indigenous peoples? Which group are we talking about? What is their definition? I mean, should we read the actual Declaration to see what it doesn't say. It just launches straight into "The indigenous peoples have the following rights". But of course, it is sad. We are meant to *do something* about historical injustices, right? I mean, we won't have a sustainable society if we don't address these imbalances, if we don't do something.

/ ... /

**Elaine:** But then what if the indigenous people don't think it's enough? How will they be compensated, if not with land? With money? Or some other rights? It's like ... I think that saying that they deserve compensation just brings up hundreds more questions to be answered.

**Alice:** Yes. It's a super complex issue. But on the other hand, if you don't address these imbalances ...

**Millie:** Then they will not be addressed ...

**Alice:** Yes. That means a risk to the status quo as well. Maybe. Yes.

**Millie:** Yes. I was just going to say the minority of the country, they don't ... they can't really fight for themselves. Let's be honest. They can't really fight for themselves, so I don't really think ... They're going of course to demand more. I think almost everyone will demand more, but I don't think anyone would care about the amount. So, this doesn't really ...

In the sequence in Box 1 the students explore the meaning of "indigenous" and try out different definitions based on a certain content presented to them by their teacher. The excerpt gives examples of how students can position themselves to the knowledge they have acquired ethically ("indigenous people are not getting what they deserve"), epistemically ("I understand why they should have that land, but as it was so long ago, it's also a little bit ... Like you can't really punish me for what my grandfather did") and

politically (“Let’s be honest. They can’t really fight for themselves”). It is important to notice here that the ways in which the students position themselves are interconnected. Not only does Alice guide the students towards a body of (intellectual) knowledge that they need to understand (indigenous rights, land ownership etc.), she also points to a moral problem and brings this intellectual knowledge into relation with an ethical dimension where the students need to consider right and wrong, good and evil. For Elaine, this starts a process of inquiry as she gets involved in reflections on moral issues.

### 8.2. The Emotional Aspect in Practice

In the situation referred to above there are no obvious emotional responses. The emotional aspect is more salient in the subsequent example (Box 2). Here, the same teacher and group of students discuss and research the difference between a state and a nation, where the question of belonging evokes strong reactions.

#### Box 2. Example of the emotional aspect in practice.

**Alice:** OK. So, what is a state and how does it differ from a nation?  
**Elam:** A state has an official government that exercises power . . . they have a monopoly of force . . .  
**Alice:** Yes. So, it’s an actor in global politics. It’s a *political* entity that has sovereignty of its territory, and it also engages in relations with other states, right? It’s a *political* organization with a government. Somebody is in charge. OK, what is a nation state then? No, I’m sorry. The *nation* first.  
**Duha:** A body of people united by a common descent, history, culture or language.  
**Alice:** So, it’s a unity among people. They *feel* that we *belong together* . . . . How many here have Swedish passports?  
 [Most students raise their hands]  
**Alice:** So . . . majority. OK. So, for us Sweden would be our *state*. This is where we are citizens. The question is: Is this where we *belong*? Is this where we *feel* . . . We *feel unity* with Sweden. We share the same *culture*, we share the same *language*, we share the same *history*. What do you think?  
**Duha:** No!  
**Alice:** No?  
**Duha and Millie:** Hahahaha!  
**Alice:** What? [students laughing]  
**Duha:** I don’t have the same culture as a Swedish person . . .  
**Millie:** (whispering) My God this is hard . . .  
**Alice:** OK. Would it be difficult for you to say that you share unity with Sweden, with Swedish . . . ?  
**Duha:** . . . people? Yes!  
**Alice:** Would it be very alien to you . . . ? I was having this conversation with my mother the other day actually . . . .  
**Duha:** . . . because, most Swedish people are Christians. I’m not a Christian.  
**Alice:** Yes . . . but most Swedish people are *super secular*. They don’t care!  
**Millie:** Yes . . .  
**Duha:** OK, I don’t know!  
**Alice:** But I mean, it’s an *interesting feeling*. It’s a *feeling*. This is what I mean. This is the definition. This is the difference between a state and a *feeling*, really! This is a feeling of unity. You belong to a nation, and nobody can argue with that, you know. That is *your* perception of something. Whereas your *state* . . . You have a Swedish passport, right?  
**Duha:** Yes.  
**Alice:** Yes. So, without question you are part of the Swedish state. You are a citizen. You have rights and obligations under the Swedish state. Whether or not you *feel unity* with the Swedish state, that’s another question. That’s for no-one else to decide but you. But it’s still interesting, isn’t it? Now, I was talking to my mother. She’s been here since 1969 I think it was, the first time she came here, in her mini skirt in the 1960s, in the winter, freezing her ass off. And she was saying the same thing, like “After all these years, I have grandchildren, I have children in Sweden. Do I feel Swedish?”, and she said “Yes, to some extent. But man, Swedish people are cold. Man, I can’t . . . It’s hard to talk to them. I have friends, but . . . ”. I was like “Yeah, yeah. Don’t judge them too harshly. They’re a bit shy”. But it’s interesting. So, what is a nation state then?

In staging this discussion, the teacher, Alice, deliberately evokes students’ emotions yet also “picks up” emotional responses and offers guidance. These emotions have both

moral and political implications for the specific understanding of the situation and the question of belonging. In the above example, the student Duha spontaneously reacts to Alice's description of feelings of unity and a common culture that includes a moral obligation to her (Islamic) culture. This involves Duha's emotional response to the politics of belonging, the difference between cultural identity, or the feeling of belonging to a group and having country citizenship. Based on Alice's response, Duha questions her own standpoint, which makes it possible to discern how morals are involved in the situation and in the interplay with others. Alice shows that these emotional responses are accepted and makes them part of a shared experience. By setting the scene in this way she deepens the students' processes of inquiry and supports the idea that even though the students' emotions may not always be possible to explain or defend by rational argument, they are legitimate and important ("This is a feeling of unity. You belong to a nation, and nobody can argue with that, you know. That is *your* perception of something"). At the end of the excerpt, Alice takes a meta-perspective on what it means to feel unity and belong to a nation and encourages the students to reflect on their own and others' moral experiences, formulate and consider arguments of their position and test their validity in their social contexts.

The sequence in Box 2 exposes the important role that emotions can play in students' discussions. It shows how students create emotional relations to global politics and how these relations lead to the students taking a stand on a certain issue. Furthermore, it is an example of how a teacher can use emotions as a driving force in students' inquiries and support their development of a sustainability commitment.

### 8.3. The Practical Aspect in Practice

The practical aspect refers to activities and actions that make encounters with the reality outside the classroom possible, i.e., actually doing something and trying to make a change in a sustainable direction. This aspect is here exemplified by a group of students and their teachers working with entrepreneurship as an extra-curricular activity (year 11, Business Management and Economics Program) as part of an exchange/school visit program between Sweden and Tanzania. The purpose of the visit was for the Swedish students to run workshops and offer the Tanzanian students the opportunity to train and develop their creativity and entrepreneurship by working on sustainable innovations and business ideas, and creating a business plan. These activities were central to the exchange program. After the visit, the Swedish students shared their experiences, feelings, and images with other students at their own school.

After the visit, one of the participating teachers and a group of three students were interviewed. The teacher Peter was asked about what he thought the students had learned from the exchange (Box 3).

#### Box 3. Example of the practical aspect in practice.

**Peter:** I believe they have learned a lot. And to be honest, I don't think it's about a certain content knowledge or whatever, but more about humanity/humanness and the emotions related to that. Also that they discovered new sides of themselves . . . That is perhaps what they learned the most . . . At least when we have talked about it afterwards. Like, "I didn't think I would react in that way", or "This has made me interested in . . . ", things like that/ . . . /I think that they would probably say a personal change . . .

In the excerpt in Box 4 the students are asked to compare their experiences from the visit with what they have learned in subjects such as the social- and natural sciences.



**Box 4.** Example of the practical aspect in practice.

**Thomas:** You can try to read about different things, about poverty, about how economies and executive boards and societies work, but you will never be able to connect at an emotional level to what you have been through. If you've been there and experienced it for yourself ... it's like ... You will never be able to understand this seed, this core of how it works if you haven't been there ...

**Tilda:** I mean we have all taken part in the education about extreme poverty and what it's like to live below the poverty line, but you will never be able to really understand it until you have been there yourself and seen it from your own perspective. Or I mean, yeah, before you are actually there. It's so incomprehensible because it's so different to your own daily life. And that is why it is so hard. It is so hard to grasp from a lesson compared to what it's like in reality.

This example highlights the importance of practical activities that make it possible for students to engage in real problems and interact directly with others. The responses of the teacher and the students reveal how the study visit made the students clarify, rethink and sometimes re-formulate their own values (and actions). The excerpts show how learning through these activities involves and is intimately connected with emotions ("I believe they have learned a lot ... about humanity/humanness and emotions related to that") and intellectual insights ("You will never be able to really understand it until you have been there yourself and seen it from your own perspective"). The excerpts also point to the moments when we "take in" the world in its difference. Taking in difference in a concrete and practical context affects these students deeply in a way that is transformative and allows them to gain new insights and deepen their sustainability commitment.

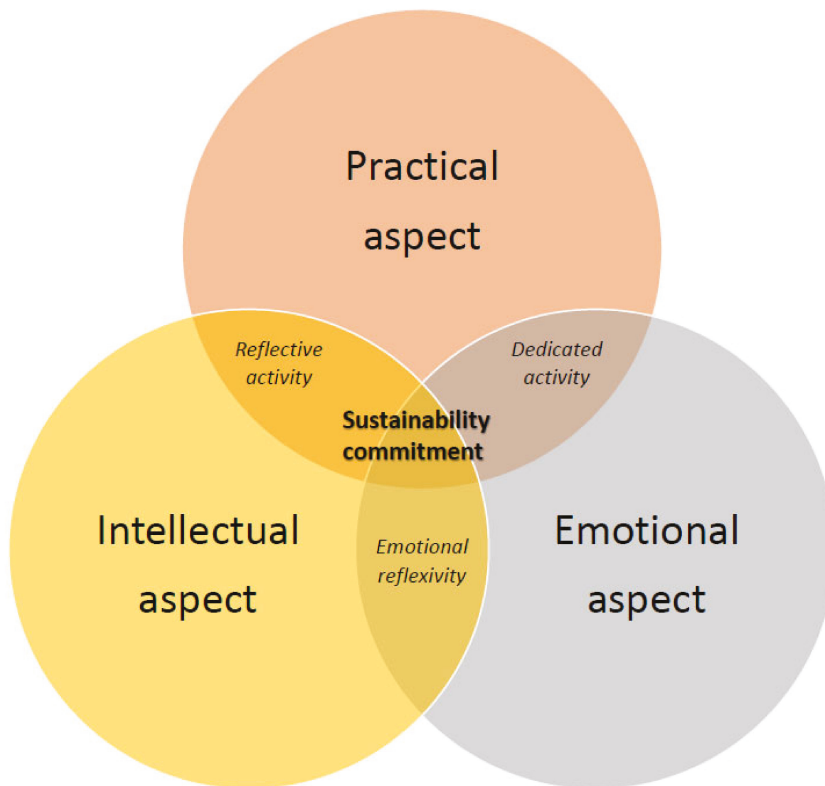
## 9. Discussion

The purpose of this article has been to propose a model that describes and frames a sustainability commitment and while providing a critical perspective on ESE practice offering a framework for selecting content and methods when teaching sustainability issues. Using a retroductive method, we have developed this model through an interplay between Nordic and German didactic theory, John Dewey's pragmatic philosophy, and several empirical studies on ESE practice.

The model suggests that sustainability commitment should be a common goal for ESE and that a sound commitment is situated at the intersection of the intellectual, emotional, and practical aspects of sustainability (Figure 3). The relationship between these aspects is reciprocal. If one or two of the aspects are missing, or if there is an imbalance between them, the commitment risks being misleading or vague.

The intellectual aspect is essential for giving the commitment scientific rigor and a critical stance. A sustainability engagement based on emotions may lack critical intellectual insights derived from e.g., postcolonial and decolonial studies. Such an engagement could run the risk of naïve activities characterized by "salvationism" and "ahistoricism", i.e., activities that portray other people as being in need or frame help as a burden of the fittest and thus fail to take the historical past of oppression and exploitation into account [48–50,75]. Without a critical perspective, there is a risk that the political and ethical nature of sustainability issues will be hidden. An educational approach that assumes a form of consensus on sustainable development overlooks the fact that power relations are constitutive of the social and that conflict and antagonism cannot be eradicated [60]. It is, therefore, essential to integrate critical perspectives into the learning process and in this way develop students' competence to identify and analyze ethical and political tensions and provide them with tools to handle conflicts in constructive ways.

On the other hand, if there is a lack of emotional involvement in sustainability issues, they become detached from the person. The actions may be reflected activities but there is no driving force for change. As shown by Ojala [59], when treated in the right way, emotions such as hope and fear are essential if students are to become dedicated and actually want to do something.



**Figure 3.** Sustainability commitment as the intersection between intellectual, emotional, and practical aspects.

Apart from knowledge about the world, it is also important for the intellectual aspect to include inquiries into the students' own epistemic, ethical, and political positions in relation to this knowledge. If this is missing, sustainability issues may become distant issues that do not relate to the students' lives and concerns. Together, the intellectual and emotional aspect can create an "emotional reflexivity"—a personal engagement anchored in scientific knowledge and ethical and political insights. This can be seen as a reflective approach that could start a careful examination of the collective "root" narratives that we are a part of and where such understandings come from [49,76].

To play a more active role in providing a sustainable transformation of society, it is also necessary to be knowledgeable about appropriate and effective actions for change and have the willingness, confidence and skills to carry them out [25]. However, an action is not just a physical activity, but also involves deciding what to do through a problem-solving process [23]. The practical is thus an indispensable part of a sustainability commitment, although too much emphasis on this may turn ESE into "solutionism" and "instrumentalism". There is therefore a danger that teachers who are attached to actions may get caught up with "doing something" and finding solutions to ongoing or emerging sustainability challenges. However, as Jensen and Schnack [23] put it: "the task is not to solve the problems of the world by 'using' the pupils" (p. 484).

Although a sustainability commitment is a common goal, we claim that the results of the students' inquiries should be an open question, in line with a pluralistic approach to ESE [37], i.e., the ethical and political standpoint on sustainability issues should be the individual student's concern. The role of the teacher is to support the development of a deep engagement anchored in scientific knowledge through a critical inquiry into

different alternatives without privileging a specific opinion. If we believe in a democratic transformation towards a sustainable society, we should allow for a plurality of standpoints in schools. However, then again, an over-focus on a concern with a plurality of perspectives without a critical approach could mean that a sustainability commitment misses the point.

In relation to previous significant attempts to define the content of sustainability awareness and interest, such as the key competence approach [14,15,17] and the action competence approach [23], we have considered the question from a didactic point of view. We have put teaching practice and the learning process in the foreground and asked ourselves how meaningful competencies can be fostered. We also agree with Shephard et al. [77] who have raised concerns about the usefulness of the terms “competence” and “capability”. They highlight that existing frameworks all too often fail to distinguish between the outcomes that students are expected to achieve and their motivation to enact them, and the pedagogical approaches designed to achieve them. These authors conclude that outcomes as competencies or capabilities “that fail to describe in educational terms the pedagogical imperatives of engagement and of assurance of learning, are unlikely to help the mission of ESD” (p. 544). Similarly, Vare et al. [78] points to the risk that an all too detailed qualification template run the risk to “atomize learning in a way that runs counter to the holistic principles of sustainability” (p. 1).

Furthermore, we have provided a theoretical basis in didactic theory and Dewey’s pragmatism and developed the suggested model in an interplay with empirical studies of ongoing practice. We have presented a structure that shows how the different components of a commitment are interconnected and are not simply competencies that people should “have” to solve sustainability problems. The action competence approach [23] has contributed important normative perspectives on what competence and action can and should mean in educational practice. The focus of this approach lies mostly on how knowledge about sustainability issues can be transformed into an actionable phase and how actions can contribute to change. In relation to this educational ideal, we have developed a holistic model for the content of a sustainability commitment that describes how actions relate to students’ intellectual understandings of and emotional responses to sustainability issues. It is our hope that these additions will help teachers to organize students’ inquiries into sustainability issues in a more meaningful way.

In this article, we have only touched on the essential didactic question of how—the best methods for teaching for a sustainability commitment. Furthermore, we have mostly argued for the different components of sustainability commitment, but have to a lesser extent stressed the depth of students’ knowledge, awareness, and skills that is required for them to qualify as sustainability citizens, who in Arjen Wals’ words are “able to interrogate resilient unsustainability and who can participate in the co-creation of new systems and associated routines that appear, at least for the moment, more sustainable than the ones in need of replacement” [19] (p. 34). What we therefore would like to encourage is further didactic research that deepens the knowledge about the relation between certain teaching efforts and students’ development of a sustainability commitment. Presently, too much of this research consists of occasional dives into classroom practice, where far-reaching conclusions are drawn from single lessons. What we think is required here is longitudinal studies covering the interplay between teaching and students’ development over several years, combined with in-depth interviews to determine how young people reason about, feel about, and value the urgent, complex, and severe sustainability challenges that we are facing today.

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**Conflicts of Interest:** The authors declare no conflict of interest.

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