

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.

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



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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 teachers. 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 implications is 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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