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ABSTRACT

Persistent youth advocacy for climate action worldwide, and recent policy activity in England, UK focused on climate change and sustainability education (CCSE), provide the context for this study. Drawing on reflections and insights predominantly gathered whilst working as a geography teacher and geography teacher educator in both England and Scotland, I explore the ways in which intergenerational dialogue can support teacher educators in the context of climate change and sustainability education. This includes the ways in which initial teacher education (ITE) involves different groups (e.g., teachers, teacher educators, school students) and provides different spaces (e.g., school sites and university classrooms) which support intergenerational dialogue. I consider the ways in which intergenerational dialogue can help teacher educators engage with the spatial and temporal facets of the moral complexities of climate change and sustainability education.

Introduction

Whilst travelling on the London Underground as a child, I vividly remember the automated warning 'Mind the gap!', which rang out ahead of the doors opening, and was emblazoned in tiles and paint on the platform edge. As a child, the gap appeared to be a gulf, and I remember gripping my father's hand as I stepped out from the train and onto the safety of the platform, glancing at the tracks and the scurrying mice below. The phrase, 'Mind the gap!' and the emotional resonance of intergenerational relationships, embodied in holding hands with my father, continue to echo down the years. This resonance is particularly strong as I reflect on the persistent gulf between global youth-led advocacy for a greater focus on climate change and sustainability in education (CCSE) (UK Student Climate Network, 2020; UNICEF, 2021) and the continued unwillingness from global leaders to reform school education so that schooling meaningfully equips young people to live with the consequences of climate-altered futures (Dunlop & Rushton, 2022a). An example of this 'gap' in England, is that whilst young people have clearly articulated they would like a co-ordinated

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review of school curricula focused on integrating CCSE across all subjects, which involves students and teachers (Dunlop et al., 2022), policy makers in England continue to overlook this as part of their response (Dunlop & Rushton, 2022). In England the gap between the vision young people have for education, the education they receive, and the willingness and/or ability for decision makers to respond remains. Efforts to bridge this gap in the absence of policy-led change in the UK have included student-led initiatives to *Teach the Teacher* (Students organising for Sustainability UK [SoS-UK], n.d.), where school students are supported with training and resources to lead a lesson in school with the aim of engaging their teachers in the importance of CCSE. Whilst urgent change is needed, so too is continued recognition of the spatial, temporal, and moral complexities of the impacts of climate change. This complexity includes the ways in which the impacts of climate change are experienced by groups in different places and times, and the extent to which those communities and individuals who have contributed least to the causes of climate change have to negotiate those impacts. Further consideration is needed as to how education can respond to such complexity, especially when the purpose of education is variously defined, understood, and enacted.

In England, the Department for Education's (2022) recent climate change and sustainability strategy is arguably consistent with the first of two Western responses to environmental problems identified by Bonnett (2012) namely, 'to develop technical solutions and to attempt to modify behaviour in ways that have minimal impact on our current underlying conceptions of the good life' (p. 287). As Dunlop and Rushton (2022a) have highlighted, the strategy places emphasis on economic framing; it depoliticises CCSE and there is a complete absence of values throughout. Therefore, the strategy does not respond to calls from young people and teachers for pro-environmental action from policy makers (Dunlop et al., 2022). These calls are consistent with seeing problems, including economic priorities, as 'a manifestation of a need to fundamentally change our underlying conceptions of the good life' (Bonnett, 2012, p. 287).

Another key absence in the Department for Education's strategy (DfE, 2022) is meaningful recognition that teacher education is a fundamental part of equipping teachers, and therefore young people, to live with climate-altered futures. Whilst the strategy indicates that the policies and frameworks to support teacher professional development in relation to CCSE already exist, analysis of these documents reveals no explicit mention of climate change or sustainability (Dunlop & Rushton, 2022a). For example, the Core Content Framework for Initial Teacher Training (CCF) (DfE, 2019b) and the Early Career Framework (ECF) (DfE, 2019a) do not include the terms 'climate change', 'sustainability', 'outdoor', 'nature', or 'social justice'. A recent survey of over 850 teachers in England underlined that fewer than 13% of respondents engaged with CCSE as part of their Initial Teacher Education (ITE) programmes (Greer et al., 2023).

The lack of visibility of CCSE in policies and frameworks focused on teacher education in England contrasts with other parts of the UK where education is a devolved responsibility, including Scotland. In the Scottish context, Learning for Sustainability (LfS) is integrated into teacher education and school leadership (Clarke & Mcphie, 2016; General Teaching Council for Scotland [GTCS], 2021a, 2021b). Learning for Sustainability combines: Education for Global Citizenship (ECG), Outdoor Learning, Children's Rights and Sustainable Development Education (SDE) into a set of guidelines. The

Learning for Sustainability National Implementation Group (2016, p. 7) characterised LfS as:

> ... enabl[ing] learners, educators, schools and their wider communities to build a socially-just, sustainable and equitable society. An effective whole school and community approach to LfS weaves together global citizenship, sustainable development education, outdoor learning and children's rights to create coherent, rewarding and transformative learning experiences.

The absence of sustainability and even explicit ideas of social justice in teacher education in England is perhaps unsurprising as in recent times, policy makers have sought to centralise and standardise the teacher education sector in England through compliance with prescribed curricula (Towers et al., 2023). At the same time, a range of initiatives have been developed in England which aim to support teachers to respond to youth-led calls for greater coverage of climate change, sustainability, and the environment within school education (e.g., Climate Adapted Pathways for Education [CAPE] Alliance, 2023; Ministry of Eco-Education, 2023; Walshe, 2023). These initiatives are broadly focused on providing teachers with sources of professional learning and communities of practice which support the integration of CCSE across different subjects (e.g., mathematics, science, geography, English) and phases of education (e.g., primary, secondary). Even with the absences and constraints in the context of ITE in England, I argue that there remain possibilities for teacher educators in England to respond to the temporal, spatial and moral complexities of climate change education in the design and implementation of their existing ITE programmes. This includes understanding teacher education as a site for moral education where the need to fundamentally change underlying conceptions of the 'good life' is central to CCSE. Consistent with ITE programmes worldwide, ITE in England is founded upon partnerships including those between institutions such as schools and universities and those between people including teachers, student teachers, university lecturers and school students. Dialogue across these different groups, communities and generations is central to these partnerships. Therefore, drawing on the approach of intergenerational dialogue in the context of both CCSE and teacher education is a promising way forward for research and practice.

As a geography teacher educator, I draw in this article on reflections and insights predominantly gathered through working with student geography teachers who completed a year-long period of postgraduate ITE as part of a programme which I led (Rushton, 2021; Rushton & Bird, 2023). Following their qualification as teachers, I have continued to engage with them during the two subsequent years they worked in secondary schools as 'Early Career Teachers' (ECTs), as part of an informal geography education network. Through this continued engagement and my own reflections as a former geography teacher and teacher educator working in England and, more recently, Scotland, I explore how intergenerational dialogue can help teacher educators engage with the spatial and temporal facets of the moral complexities of climate change education. To begin, I briefly explore what is meant by intergenerational dialogue in the context of climate change education.

Intergenerational dialogue in the context of climate change and sustainability education

Intergenerational learning involves sharing of ideas, knowledge, attitudes and competencies across generations, providing opportunities to engage with and explore different ways of understanding issues (Boström & Schmidt-Hertha, 2017). An intergenerational approach to learning can generate deeper and broader engagement (Williams et al., 2017) if this goes beyond simply intergenerational communication, where adult teachers talk to and with children and young people who are students in their classrooms. Intergenerational dialogue is an aspect of intergenerational learning, where spaces for meaningful and reciprocal dialogue between generations are intentionally created and supported. Intergenerational dialogue can enable greater connection between adults, children and young people (Wyness, 2012); it can be empowering for all involved (Klein et al., 2021). Dialogue can support the creation of new ideas and perspectives through exploring differences in meaning through talk (Bohm, 1996) and such dialogue can strengthen a sense of trust and community through learning about and from different groups (Graham & Fitzgerald, 2010). Previous research indicates that multiple perspectives elicited through meaningful and authentic dialogue can be a resource for learning (Berglund & Gericke, 2021; Lundegård & Wickman, 2007). I understand intergenerational dialogue as something richer and more transformative than simply adults and children talking in a classroom. Intergenerational dialogue is the critical engagement with the perspectives of others where learning occurs that has the potential to transform the learning of those within and beyond the initial dialogue.

Previous research has considered spaces for intergenerational learning and dialogue in the context of environmental education between children and adult relatives (e.g., Prabara-Sear, 2015; Spiteri, 2020) and in broader approaches to sustainability (Klein et al., 2021), and environmental (Ballantyne et al., 1998) and climate change education (Williams et al., 2017). Intergenerational dialogue is frequently positioned as a way of providing children and young people with meaningful opportunities to share their perspectives and experiences on things which affect them, which is consistent with the UN Convention on the Rights of the Child (1989) (see, for example, Dunlop et al., 2022; Williams et al., 2017). Concomitantly, global leaders have underlined the value of intergenerational dialogue in the context of environmental decision making (Robinson, n.d.; UN, 2021). However, research underlines that in a range of contexts, barriers persist for intergenerational dialogue that aims to result in child- and/or youth-led change (Chineka & Yasukawa, 2020; Mitchell et al., 2008; Prabara-Sear, 2015). Mannion (2007) has argued against positioning young people as either marginalised from adult structures or agents of their own destiny independent of adults, but instead to hold a more relational perspective which recognises the adult dimension of young people's agency. One way of doing this is through intergenerational dialogue, where relational spaces are intentionally created, and where multiple ideas and perspectives, drawn from across generations, form the basis for learning. For example, when exploring environmental issues and decision making which impact young people such as air pollution or resource management, schools can draw a range of groups beyond teachers and school students. These voices can include parents, former students, governors, and members of the local community who not only bring different experiences, ideas and perspectives to

the issues discussed, their engagement enables young people to directly engage with adult structures which inform, facilitate, and inhibit the agency of children and young people.

Recent youth-led advocacy for action on climate, including that led by the activist Greta Thunberg, has underlined the injustices of current inaction by global leaders which negatively impact the childhoods and futures of young people today. This injustice is underlined in Thunberg's speech to United Nations leaders in 2019, 'I should be back in school on the other side of the ocean . . . Yet you all come to us young people for hope. How dare you! You have stolen my dreams and my childhood with your empty words' (British Broadcasting Corporation [BBC], 2023, n. p.). Greta Thunberg's speeches to world leaders have increased the prominence of young people's experiences and perspectives in the context of climate change and can provide a stimulus for classroom-based intergenerational dialogue. However, as Rushton, Dunlop, et al. (2023) highlight, discussions about the place of education in the context of climate change frequently omit dialogue between different groups involved in formal education, for example teachers, teacher educators and young people. Indeed, whilst intergenerational dialogue might not immediately seem part of school-based climate change education, and certainly its potential is under-developed, I argue that it has an important role if all children and young people are able to access effective CCSE which equips them to live with the complexities of a climate altered future. For example, the impacts of climate change raise complex and urgent questions as to what risks people living today should be able to impose on future generations and ecosystems (UNICEF, 2021) and because action or inaction has consequences for all (Klein et al., 2021). Classroom-based intergenerational dialogue provides relational spaces of learning where these complexities, with the accompanying emotions of anger, fear, and hope (Rushton, Sharp, Kitson, et al. 2023), can be meaningfully considered.

Intergenerational dialogue as an approach to climate change and sustainability education for teacher educators

How then, can intergenerational dialogue support an approach to CCSE in both school-based and teacher education, which recognises the impacts of climate and ecological crises as 'a manifestation of a need to fundamentally change our underlying conceptions of the good life—and hence of moral education' (Bonnett, 2012, p. 287)? In what follows, I explore the ways in which intergenerational dialogue supports teacher educators to engage with the *temporal* and *spatial* facets of the moral complexities of CCSE.

Time and the moral complexities of climate change and sustainability education

Classrooms are fundamentally intergenerational sites where teachers and students work and learn together and where families and community actors may also contribute ideas, experiences and knowledges which can span many generations. For example, as a geography teacher exploring the topic of migration, teachers and students may draw on the lived experiences of their parents and grandparents, as well as wider community stories of migration, as part of their learning. These stories of migration which unfold over many decades provide touchstones to explore responses made by peoples to their changing contexts (social, political and environmental) over time. Migration stories

which have featured in my own classrooms as a geography teacher and geography teacher educator include the movement of peoples in response to the partition of India in 1947 (which resulted in the formation of India and Pakistan), as part of the Windrush generation (the migration of people from the Caribbean to Britain during 1948–1972) and migration to Britain and other parts of Europe related to recent conflicts in countries such as Iraq and Ukraine. All three of these examples involve complex ideas about the movement of people which have changed over time.

In the context of teacher education, classrooms frequently become multi-generational spaces, including student teachers, school mentors, university-based tutors, and school students. These different groups bring varied temporal perspectives which, in the context of CCSE, can be leveraged to share and discuss the temporal complexities of the impacts of and responses to climate change and ecological crises. In the context of CCSE, intergenerational dialogue across multiple generations may help us to critically engage with the movement of peoples in response to climate and environmental crises in the past, present and future. Migration stories involve ideas of justice, equity and belonging and provide a vital lens through which to explore current and future migration which is driven by the impacts of changing climates. Intergenerational dialogue enables us to [re] consider questions of values, equity and justice in relation to the movement of peoples over time: how might the migration stories of peoples whose homelands and livelihoods are destroyed by rising sea levels be understood by future generations? Intergenerational dialogue can support classroom-based explorations of past action and/or in action by different groups, for example decision makers, business leaders and faith groups, and explicitly consider the moral dimension of past, present and future action and inaction. Explicitly engaging with the temporal complexity of climate change through engagement with the generations in the classroom or school space can allow authentic discussions of what it is to live with the troubled present and precarious future which climate change represents. At the same time, student teachers are frequently of a similar generation to older secondary school students, with perhaps as little as three or four years separating their ages. This can further enable classrooms to be spaces for intergenerational dialogue where school students have teachers who are part of the same or proximate generation, perhaps with shared or similar histories and experiences.

Scholars and policy makers have underlined the importance of drawing on the future in the context of climate change and sustainability concerns. Considerations of the future can include calculations using models and simulations and imagining futures through storytelling and visualisation (Anderson, 2010). Futures workshops can bring people together to generate ideas in response to social problems, including those focused on climate change and sustainability issues (Alminde & Warming, 2020) and have been used to imagine futures in climate change and sustainability education (Dunlop et al., 2022). Futures workshops frequently involve phases of critique where problems and frustrations are identified followed by phases of fantasy to creatively explore solutions and phases of implementation to consider how ideas can result in transformative change (Dunlop et al., 2022). Drawing on the concept of the future in education, which allows classroom-based considerations of possible, probable, and preferable futures (Torbjörnsson & Molin, 2014), can support students to develop constructive hope and identify future action (Facer, 2016; Finnegan, 2022). Considerations of the future include the outlook or expectations which students have in relation to climate change and sustainability issues

and the relationships between these expectations and the practices of teachers (Finnegan, 2022). Considering the future through intergenerational dialogue in the context of teacher education enables teachers, students, teacher educators, student teachers and other actors and groups to critically consider their own futures and the futures of others, given the varied impacts of climate and environmental crises. Such considerations inevitably involve those involved grappling with the emotions (e.g., fear, hope, anger, grief) of living with climate-altered futures (Rushton, Sharp, Kitson, et al., 2023). As Dunlop and Rushton (2022b) have argued, emotionally responsive pedagogies which identify responsibilities, develop students' coping potential and improve future expectations are vital for effective climate change education. Intergenerational dialogue can allow for the identification of responsibilities, including the causes and consequences of climate change. This critical engagement through intergenerational dialogue can then support teachers, teacher educators, students and student teachers to develop capabilities to take action in relation to climate change and sustainability issues, which ultimately can build constructive hope (Finnegan, 2022) and transform emotional appraisals of the future (Dunlop & Rushton, 2022b).

Space and the moral complexities of climate change and sustainability education

Space is a foundational or threshold concept in geography and geography education. In current geographical thinking, space is understood as more than a location on a map but as a complex context, where relational and fluid agency is enacted (Horton & Kraftl, 2006; Massey, 2005; Rushton & Bird, 2023). Massey (2005) identifies three propositions when conceptualising space. Firstly, space is the product of interrelations and interactions from the tiny to the global. In the context of teacher education, this could mean individual or 'tiny' interactions between a student teacher and their mentor along with interrelations between education policy makers at a national education summit: space is constituted or produced through both. Secondly, space consists of plurality and multiplicity where varied trajectories co-exist. In the context of the classroom or the lecture theatre, student (teacher) learning has multiple and different trajectories that co-exist, which teachers and mentors simultaneously respond to that are consistent with this aspect of space. Thirdly, space is continuously under construction, space is 'a simultaneity of stories-so-far' (Massey, 2005, p. 9).

Teacher education frequently draws on different spaces of education and learning. At a basic level, during their school-based practicum, student teachers frequently work and engage with a variety of school settings and other formal (e.g., university) and informal (e.g., museums, extracurricular clubs) spaces of education. Through working in different settings, sometimes with the same school students, student teachers can understand these as more than simply different places for learning but as areas for dynamic and relational agency (Horton & Kraftl, 2006; Massey, 2005), which both shape and are shaped by the children, young people and adults who learn and work within them. At the same time, Massey's (2005) conceptualisation of space, as both created by interrelations and a sphere of multiple possibilities might help us further understand how intergenerational dialogue supports education which responds to the moral complexities of climate change education. Firstly, space provides a way to further understand intergenerational dialogue as a messy entanglement of the cultural, material, and relational conditions and qualities

which are present and necessary in teacher education. Intergenerational dialogue can be a product of negotiated relations which are multiple and occur in an open system (education) which is always under construction. Secondly, as time is an intrinsic aspect of space, the spatial dimension furthers our understanding of the intergenerational as multiple and non-linear. To put it another way, intergenerational dialogue in the context of teacher education can be understood as simultaneous multiplicity, where these temporal dimensions are also messy and juxtaposed and where connections between these dimensions are yet to be made. This 'messy' nature challenges notions of teacher education and professional development as a linear trajectory of 'progress' and the pedagogy of intergenerational dialogue provides opportunities for such entangled, iterative, and multi-faceted learning to occur.

Teacher educators can draw upon this understanding of spaces within climate change education, so that learning is context-specific and draws on the spatial resources which children, student teachers and wider communities bring. This could include incorporating the climate stories and heritages which school children and their families and communities bring to the classroom, exploring different languages and creative ways to make more visible the spatial complexities of climate change. This approach is consistent with effective climate change education, which responds to context and culture, and includes information which is personally relevant and meaningful for students (Monroe et al., 2019; Rousell & Cutter-Mackenzie-Knowles, 2020; Rushton, Sharp, & Walshe, 2023). Arguably, intergenerational dialogue, where there is critical engagement with varied perspectives over time which can result in multiple possibilities, is essential in cultivating school students' and student teachers' relational agency. Such relational agency is integral to enacting transformative climate change and sustainability education (Jónsson & Macdonald, 2021; Rousell & Cutter-Mackenzie-Knowles, 2020) for school students and, I argue, student teachers.

Concluding reflections

As has been previously noted, in England, ideas of values are absent in CCSE as articulated by the Department for Education (DfE, 2022; Dunlop et al., 2022) and climate change and sustainability are absent in government-led initial teacher education curricula and frameworks (Dunlop & Rushton, 2022). These absences represent both challenges and opportunities for climate-conscious teacher educators in England to foreground a moral dimension of CCSE so that teachers of all subjects and age-phases are equipped to engage with the complexities which they will encounter in the classroom.

Orchard et al. (2016, p. 42) have previously underlined the inherently ethical work of teaching, and that teachers need opportunities for critical reflection to enable them to respond to 'existential anxieties' which they face. Drawing on Shulman's (2005) concept of signature pedagogies, Brooks et al. (2023) highlighted that recent teacher education reform in England fails to acknowledge a key dimension, that of learning how to act with integrity as a professional teacher. I suggest that fundamental to acting with integrity as a teacher and therefore a teacher educator is equipping all teachers and young people with the capability to understand and respond to the moral complexities of climate change and sustainability. Intergenerational dialogue could be understood as part of a suite of signature pedagogies

which enable teachers and young people to learn about and live with the impacts of climate change and sustainability issues (e.g., resource management, air pollution) in a just way.

As has been underlined in this article and previously (e.g., Schusler et al., 2017), incorporating intergenerational dialogue in the context of education involves the negotiation of tensions, which shift and change over time, between youth agency and autonomy and adult power and authority. Taft (2015) highlights the need for structured approaches and practices in the context of intergenerational dialogue which amplify the idea of young people and actively interrupt adult power. Formal school education (and arguably teacher education) has a focus on intergenerational *communication* which can consolidate adult authority and power. In the context of teacher education there are multiple layers of authority and power which need to be acknowledged, including those between student teachers and school-based mentors and university-based tutors as well as those between school students and adults, which include teachers, school leaders, governors, and parents. Intergenerational dialogue can afford children, young people, and student teachers greater relational agency, as not only does intergenerational dialogue bring together varied perspectives which draw on different temporal and spatial dimensions, it critically examines these perspectives. In the context of sustainability education, intergenerational *dialogue* rather than intergenerational *communication* underpins collaborative learning which can lead to transformational understanding (Jónsson & Macdonald, 2021). Consistent with Orchard et al. (2016), I argue that for intergenerational dialogue to be effective, teachers (and indeed students) will require time and support to engage in critical reflection so that they are not burnt out by experiencing climate change education related existential crises.

The ideas and reflections which I have shared are rooted in geography and geography education which arguably readily lends itself to exploring the temporal, spatial and moral dimensions of CCSE. However, if the purpose of climate change education is to engage with moral complexities such that more just ways of life are made apparent and enacted, I contend that intergenerational dialogue is an approach which can support a wide range of disciplinary-focused CCSE. Furthermore, this consideration of the purpose and value of intergenerational dialogue might provide a stimulus for reflection on the place of intergenerational dialogue in other moral contexts. Returning to the metaphor at the opening, perhaps through intergenerational dialogue as a signature pedagogy of (teacher) education, we can continue to 'mind the gap' in climate change and sustainability education.

Notes on contributor

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Data availability statement

All data generated or analysed during this study are included in this published article.

Ethics statement

No ethics approval was required due to the nature of the work reported on here; that is, a study based on self-reflection by the author which did not involve direct collection of empirical data.

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