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Taking stock of environmental education policy in England – the what, the where and the why

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ABSTRACT

Taking England as our case study, this paper reviews secondary school environmental education from a policy perspective. By drawing on Stevenson's typologies for environmental improvement and Lucas' categorisation of environmental education, we analyse national policy documents, local authority and Multi-Academy Trust policies; and individual school planning documents. Our findings suggest in these areas a general absence of environment education policy, and where identified a rhetoric towards *conservative reform* framed as technology solutions, where learning is *about* the environment, rather than *for* the environment. We explain how the (lack of) environmental education rhetoric is a result of global economic changes and national austerity policies, and offer insights and signposting for policy makers.

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1. Introduction

In this paper, we review secondary school (11–16 years) environmental education policy in England, or lack thereof, and reflect on its underlying bases offering insights and recommendations for policy designers. We develop this analysis and discussion at the culmination of two decades of political, economic and social upheaval which have seen the breadth and depth of policy, both national and local, wax and wane. Our research follows in a line of studies which have examined the status of environmental education at various times, and in various parts of the world. For example, Scott and Reid (1998), some two decades ago, in their analysis of policies in England and Wales following the introduction of the National Curriculum argued that environmental education curriculum change was unlikely due to its flawed conceptualisation and because of the limited support on offer to schools. Gough (2011), meanwhile, on reviewing the Australian government's approach to environmental education as part of the 2010 introduction of the National Curriculum, noted the enduring battle for survival environmental education had, highlighting its ongoing tensions with science education within the formal curriculum. Shared across both these contexts was a reported shift from environmental education to Education for Sustainable Development (ESD). Also noteworthy is Stahelin's (2017) reports from Brazil of their efforts at a policy level to push back on the ESD script to develop a more critical approach.

Building on the work of the above scholars, we turn attention to the contemporary situation in England¹ at the end of the 2010s. Our research is guided by two main questions:

- What are the policies shaping environmental education in England?
- What are the implications for practice?

In researching the policies shaping environmental education, a third question is also of interest:

- What are the underlying drivers – political, social, economic – which appear to steer environmental education policy?

We begin by setting out the political climate which environmental education has travelled through over the past forty years. We then outline the process we used to identify pertinent policies. Next we discuss our analytical framework for examining the ways these policies support environmental education in secondary schools, and their social, political and economic bases. We then present our analyses of national, and local policies, and their consequences for environmental education practice. Finally, alongside related discussions from the literature, we reflect on what our findings indicate for future policy advocacy in environmental education in England and beyond.

2. Environmental education in England shaped by the political climate

All countries have their own unique history of environmental education. To help situate our findings and to provide a basis against which to consider current environmental education policy, we begin by briefly reviewing the historical and political context in England for environmental education. In so doing we adopt a contextual/historical view in which we are alert to the forms of power shaping and informing policy. Such forms of power may be political, institutional or individual and by understanding the role of key players a clearer insight into why extant situations have developed might emerge (Ball, Maguire, and Braun 2012). Inclusion of this broader framing is important due to the recent turbulence on both global and national levels, given the 2009 global economic recession and the UK government changes, from a Labour lead government to a Conservative/Liberal Democrat coalition through to a Conservative lead government.

Environmental education began to gain traction as a curriculum discipline in the 1980s and 1990s (Tilbury 1995). It emerged in the late 1970s in England from a coalescing of five related, but distinctive movements – environmental studies, outdoor education, conservation studies, agriculture studies and urban studies. Education for Sustainable Development (ESD) also emerged during this period in response to the Brundtland Report (World Commission on Environment and Development (WCED), 1987) and the two disciplines quickly became synonymous in the public arena. We, however, regard environmental education and ESD as differing significantly (Gough and Scott 2003; Winter 2007). Simply, whilst environmental education values humans and non-humans equally, ESD is built on the premise that the environment is a human resource and that economic development is central to the global agenda for change (Bonnett 2013).

In 1989, the centrist Conservative government introduced the National Curriculum in England and Wales, with environmental education positioned as one of five cross-curricula themes. As Scott and Reid (1998) note, contemporary commentators were optimistic that, given the increase in status, environmental education would become an established component of formal schooling. However, alongside the new National Curriculum, the government introduced school league tables to compare the examination results of specific 'curriculum subjects' – a categorisation which did not include environmental education. This resulted in schools having to prioritise subjects such as maths and English as these were formally examined and externally reported. Further, Ofsted, the newly established government department overseeing educational institution inspection, omitted environmental education provision from the inspection framework. In this new era of what Ball (2003) terms 'performativity', where practitioners organise as a response to targets and evaluation, environmental education as a non-statutory, cross-curricula theme,

lacking state recognition, became side-lined. As a result, and with schools left to negotiate the implementation of competing policies, environmental education provision in the 1990s in secondary schools in England was, at best, patchy (Winter 2007).

In 1997, New Labour entered government with legislative priorities that included improving education and action on climate change. Their manifesto stated

We will put concern for the environment at the heart of policy-making, so that it is not an add-on extra but informs the whole of government, from housing and energy policy through to global warming and international agreements. (The Labour Party 1997)

One early outcome of the new government's agenda on environmental issues was the establishment of The Sustainable Development Education Panel (SDEP) jointly sponsored by the then Department for Education and Schools (DfES) and the Department for Environment, Farming and Rural Affairs (Defra). The panel – directly responsible to the Environmental Audit Committee – had a clear mandate to review and make recommendations for ESD in England and to contribute to the major National Curriculum review. In 2003, the panel produced the strategy *'Learning to last: The Government's Sustainable Development Education Strategy for England'* (Sustainable Development Education Panel 2003). This was a call for sustainable development to have more prominence within the statutory curriculum, and to be embedded within schools' ethos and integrated into all subject areas. Further, the strategy highlighted the necessity for an integration between formal education and community and individual action.

However, the strategy was broadly criticised by academics and teachers for having no discernible government champion, financial support or method of evaluation. Phillips (2008; 81) summarised the strategy as nothing more than 'a bureaucratic add-on' leaving environmental education concerns 'very much at the fringes of the core education covered sporadically and superficially within subjects such as science, geography, citizenship, religious education and design and technology'. Despite such criticisms, New Labour's term in office (1997–2010) saw sustainable development and climate change amelioration rise in political salience (Gillard 2016); the apex of which was the passing of the Climate Change Act (2008). This act was celebrated as a first-of-its-kind national level innovation legally binding a country to ambitious greenhouse gas emission targets (Carter 2014). It presented a cause for optimism in the environmental education sector.

However, in 2010, in tandem with the global financial downturn, the UK experienced a political shift resulting in a Conservative-Liberal Democrat Coalition government and, since 2015, a Conservative government. In this period, the political appetite for environmental issues was much diminished. For example, in 2011 the Sustainable Development Commission, an independent advisory body, was closed and its functions were not allocated elsewhere. The importance of the Commission was that it had positioned environmental education as an opportunity to solve larger societal problems such as unemployment and civic responsibilities through, for example, apprenticeships. The loss of the Commission, and its voice in government arguably resulted in the 2013 Poverty and Social Justice paper which omitted any reference to the critical role that the environmental sector could play in the future job market.

Concomitant with reductions in funding across all departments, the coalition government introduced a 'back to basics' ideological approach to education policy (Alexander 2014). Aligned with austerity measures, the focus on basics was portrayed as key for future economic success. Consequently, 'traditional' school subjects (e.g. science, mathematics, English) were prioritised alongside a revised curriculum which focused on the acquisition of subject knowledge content. These revisions resulted in the status of environmental education being much reduced. Ironically, the changes in government rhetoric, and in curriculum and Ofsted policy which served to relegate environmental education in England, took place during the UNESCO's Decade of Education for Sustainable Development (2004 – 2014).

Given this history, and the clear linkage, and we would argue inseparability, between educational change and political, economic and social change on one hand, and the inseparability between educational policies and environmental education on the other, the question is where has this left environmental education in secondary schools in England? What is the current situation? In seeking to answer this, we present the process of the selection of key policies.

3. Selection of key policies

Our focus on policy reflects our understanding of such texts as representations of the ideologies and the potential hegemonic power that their respective authors exert (Anderson and Holloway 2018). Since power and ideology are enacted across varying planes, and that no policy mandates environmental education in England, it was important that we identified the key policies shaping practice at all levels of authority. We thus identified key national policy documents that implicitly or explicitly direct school practice, which were relevant to environmental education practice, including curriculum and examination specifications; Local Authority and Multi-Academy Trust policies; and individual school planning documents. To narrow our policy sample we applied the comprehensive list of search terms developed by Aikens, McKenzie, and Vaughter (2016) in their systematic literature review of international policy research in the area of environmental and sustainability education. The search terms included 'environmental education', 'education for sustainable development', 'sustainable development education', 'education for the environment', 'conservation education', 'fieldwork' and 'ecology education'. The identified policy texts were then categorised into the five policy areas discussed below.

3.1. National policy

Government policy records available online (gov.uk) dating between 2008 and 2018 were examined across government departments and non-department public bodies including: Department of Education (DfE); Department for Environment, Food and Rural Affairs (Defra); Department for Business, Energy and Industrial Strategy (BEIS); and Natural England (NE). A total of 16 documents were identified concerning environmental education-related policies, documents and supporting materials.

3.2. Local policy

To gain an insight into the nature of local policies, a search for environment-related education documents and practices was completed across multiple websites and documents for Local Government Authorities (LA) and Multi Academy Trusts (MATs) over a one-month period (May 2017). One LA and one MAT – those appearing first alphabetically – was selected from each of the ten administrative regions in the UK. The ten selected LAs were thus taken as geographically representative of the 152 LAs across the country, while the ten MATs represented geographically the 1121 that existed, during the search period, in England. However, we acknowledge that this sampling technique was not sensitive to the range of cultural values across LAs and MATs and in doing so might have 'missed' more extreme interpretations.

3.3. The National Curriculum

The National Curriculum sets out the Programmes of Study (PoS) – the subject aims and content – which applies to all schools maintained by the Local Authority in England. Whilst privately-funded schools and Academy schools are not required to follow the PoS, they are important documents as examination boards include all directives from the Key Stage 4 PoS (KS4)

(14–16 years) in their examination specifications. We selected the PoS for science and geography as these are the English National Curriculum subjects. In choosing to focus on geography and science we acknowledge that other curriculum subjects, including religious education, design and technology and citizenship include environmental-related themes. However, unlike countries such as Australia and Scotland who have adopted a cross-curricular approach to environmental education (Hill and Dymont 2016), in England the traditional separate subject boundaries have been retained and reinforced following the most recent curriculum review. Therefore, due to the scope of the research we focused our attention on those subjects which were widely understood as having an substantive role as most readily aligned with environmental education (Scott and Vare 2018). That is, the PoS for science at Key Stage 3 (KS3) (11–14 years) and Key Stage 4 were analysed (Department for Education 2014). Similarly, the PoS for geography at KS3 were analysed. Geography is mandatory up to KS3 only; there is no KS4 geography PoS.

3.4. Schemes of work and published resources

Using our own institution's Initial Teacher Education secondary school partnership contact list, 15 science departments, geographically spread across Greater London, were contacted via email requesting their KS3 and KS4 schemes of work. A scheme of work is the name generally given to a sequence of lesson topics listing the lesson objectives, activities, assessment opportunities and links to resources. Each school's science contact was asked to forward the email request to a geography colleague in the school. A follow-up request was sent to schools who had not replied. A total of 11 schools (which included 11 science departments and 9 geography departments) responded with a range of documents. The majority of documents linked to purchased schemes of work bought from companies specialising in education resources. In addition, popular published textbooks, some endorsed by examination boards for secondary science and geography (KS3 and KS4) were examined.

3.5. Examination specifications

There are three examination boards in England: OCR (the Oxford, Cambridge and RSA), AQA (the Assessment and Qualification Alliance); and EdExcel (Education and Excellence). Each examination board publishes examination specifications for GCSE science and geography. A GCSE science 'core' specification (that includes aspects of biology, chemistry and physics) was analysed for each examination board but the separate science GCSE awards for biology, chemistry and physics were not. This was due to the higher uptake by individual students of GCSE core science (67.4%) compared to separate sciences (biology, 25.3%; chemistry, 24.8%, physics, 24.7%), as reported by Carroll and Gill (2017). Similarly, a GCSE geography specification was analysed for each examination board.² The specifications analysed were all to be examined in summer 2018.

4. Analysis

In order to identify the underpinning rationalities and prevailing technologies shaping each policy, we adopted a textual analysis based on Lucas' (1972) and Stevenson's (1987/2007) typologies. Thus, our analysis explored the texts from two, interlinked perspectives. The first offering us a method to reveal the purpose of the environmental education, and the second sought to elicit the underpinning ideological vision for environmental improvement. Explained further, for the first perspective, we sought to identify the imbued *purpose* of the environmental education. To define purpose, we applied Lucas' (1972) classification, which categorised education *about* the environment, education *for* (the preservation of) the environment, and education *in* the environment, as well as classes formed by combinations of each. That is, we considered whether the

purpose of the environmental education policy was to foster a) education *about* the environment, emphasising cognitive understanding (knowledge) and the development of skills to obtain this understanding; b) education *for* the environment and concomitantly environmental advocacy; c) education *in* the environment, which highlights the process of being taught outside the classroom; or, d) an amalgamation, e.g. education *for* and *in* the environment.

To understand the underlying drivers steering environmental education, our second perspective sought to identify the *ideological vision* for environmental improvement imbued in the texts. In so doing, we applied Stevenson's (1987/2007) typology for environmental improvement. Stevenson's framework succinctly identifies two broad scenarios adopted by policymakers seeking to reform environmental policy, and by extension, environmental education policy, with two variations for each scenario. The first scenario can be characterised as *conservative reform*, which is either enacted through the application of a technical approach, or a political approach. A technical approach to environmental improvement involves the development of technological fixes, whereas, a political approach seeks improvement through legal, political, economic and technical decision-making. Neither, however, address or require a change in social or economic structures or institutions. For example, policy focused on the teaching of scientific developments towards carbon capture technologies, whilst lacking critical reflection on system-wide energy consumption habits, would be identified as text demonstrating a *conservative reform* (technical) ideology.

The second of Stevenson's scenarios is characterised as *radical reform*, which is enacted either through a socially critical approach, or an 'alternative' approach. A socially critical approach to environmental improvement views the issue as reflecting larger problems in our society, particularly concerning the economy and the unequal distribution of resources. An 'alternative' approach can be described as an emphasis on a 'return' to nature, for example, advocating a shift back to self-sufficient communities. Thus, policy focused on the teaching of indigenous cultures as offering alternative ways of living would be identified as text demonstrating a *radical reform* (alternative) ideology.

To apply the frameworks, first the policy documents within the sub-group were thoroughly read and relevant text was extracted into a spreadsheet. Next, the extracted text, was analysed initially for the purpose of environmental education (coding for the type of environmental education e.g. learning facts identified as *about* the environment). The text was then analysed for the (mostly) imbued ideological vision for environmental improvement (e.g. a focus on scientific research identified as *conservative (technical) reform*). Finally, in understanding that policies are not separate entities, but rather are directly influenced by other policies, our analysis was iterative, in that we moved back and forth through the hierarchies of the policy documents to ascertain possible linkages.

5. Findings

5.1. National policy

The 'quietening' in national policy pertaining to environmental education set out above in [Section 2](#) has continued in recent years. For example, the '*DfE strategy 2015 to 2020: world-class education and care*' (Department for Education (DfE) 2015) and the white paper '*Educational Excellence Everywhere*' (DfE 2016), lack any policy or guidance allied to environmental education. This absence is made starker by priorities which promote 'the take up of STEM study', the need for 'character and skills education' and for young people to become 'active citizens' (DfE 2016, 23). Yet, these documents do not cite the environment as a context *in* which or *for*, such priorities could be realised. In 2016, environmental concerns were again side-lined: the Department for Energy and Climate Change, created in 2008 was closed with staff and responsibilities 'folded' into the Department of Business, Energy and Industrial Strategy (BEIS).

More positively, however, and perhaps in response to the reduction of environmental policy elsewhere in government, Defra's agenda is notable in its inclusion of environmental education issues. For example, *Defra's 2015–2020 Strategy* highlights the need 'to unleash the economic potential of food and farming, nature and the countryside' (Department for Environment Food and Rural Affairs (Defra) 2016, para. 1) with the requirement for rural areas to offer high quality education and training by, for instance, expanding apprenticeships in food and farming. In practice, the policy was supported by funding for educational farm visits and staff training (Natural England 2015a, 2015b). The *Plan for National Parks* meanwhile, included an aim to increase young people visiting, volunteering and working in National Parks (Defra, Environment Agency, and Natural England 2016). In examining the underpinning rationales of these documents, two purposes of environmental education are evident. First, education is presented as being *in* the environment, whilst the skills to be acquired can be characterised as being *about* the environment. However, whilst on the surface the initiative appears to be additionally *for* the environment, the emphasis in the original strategy makes this purpose unlikely. That is, as the policy sets out 'to unleash the economic potential of food and farming' the policy promotes economic growth rather than serving to create advocates for the environment in the fullest sense. With respect to the vision underpinning the Strategy, meanwhile, we would argue that it may best be described as a *conservative reform* (Stevenson 1987/2007), and one that sustains rather than challenges the dominant capitalist and market-driven paradigm. An issue we return to later.

Defra's long awaited plan, *A Green Future: Our 25 Year Plan to Improve the Environment* (2018) also makes reference to environmental education. The document presents a broad vision for environmental management and stewardship and includes a chapter dedicated to connecting people with the natural world. The chapter notes that in this way the wider population will have the means and motivation to 'improve the natural world and spread the word about environmental issues' (Defra 2018, 82). However, a more critical reading would suggest that rather than addressing environmental improvement – and thus advocating *for* the environment – the focus appears to be on foregrounding the public's well-being as an outcome of nature connection, and thus can be described as adopting a utilitarian purpose for engagement with the environment. In short, it is challenging to apply Stevenson's typology to the relevant chapter in this publication as notions of environmental improvement are minimal.

In sum, current environmental education in government policy is limited and the 'quietening' which began at the beginning of the decade persists. Moreover, it would seem that there is a lack of clarity as to which governmental department should lead on environmental education: whilst one might expect the DfE to be responsible for provision, Defra is, to some extent, filling the void. Significantly, and as highlighted earlier, this lack of clear leadership seems to have persisted alongside the field's volatility to political fluctuations. Indeed, in 2003 when ESD had some political momentum, parliament's Environmental Audit Committee reported a lack of government department leadership and coordination (House of Commons 2003). It would appear that this limited leadership and lack of comprehensive vision has contributed to the deficient and muddled policy landscape which we experience today.

5.2. Curriculum, schemes of work, examination specifications

Shifting to a finer-grained approach, with a focus on secondary schools, we take up the analysis in the policy documents of the school subjects most frequently aligned with environmental education. First, we explore policy for secondary school geography in England before turning our attention to secondary school science.

Table 1. Instances of environment-related education within geography GCSE specifications.

Content Themes	AQA 2016a (8035)	Edexcel 2016a(A) (2017)	OCR 2016a(Geo A (J383))
Specification aim	This exciting course is based on a balanced framework of physical and human geography. It allows students to investigate the link between the two themes, and approach and examine the battles between the man-made and natural worlds. (p.3)	Geography enables young people to become globally and environmentally informed and thoughtful, enquiring citizens. (p.6)	The specification will introduce and extend learners' insight into and exploration of both the geography of the UK and the wider world. Learners will be equipped with a wide range of geographical skills which will help them become both adaptable and resilient no matter which future pathway they choose. (p.5)
Energy management	Different strategies can be used to increase energy supply: Moving towards a sustainable resource future: individual energy use and carbon footprints. Energy conservation: designing homes, workplaces and transport for sustainability, demand reduction, use of technology to increase efficiency in the use of fossil fuel. (p.23)	Renewable and non-renewable energy resources can be developed. There is increasing demand for energy that is being met by renewable and non-renewable resources. Meeting the demands for energy resources can involve interventions by different interest groups. (p.22)	Energy in the UK is affected by a number of factors and requires careful management and consideration of future supplies: The development of renewable energy in the UK and the impacts on people and the environment. The extent to which non-renewable energy could and should contribute to the UK's future energy supply. Economic, political and environmental factors affecting UK energy supply in the future. (p.8)
Climate change	Managing climate change: mitigation – alternative energy production, carbon capture, planting trees, international agreements; adaptation – change in agricultural systems, managing water supply, reducing risk from rising sea levels. (p.12)	Uncertainties about how global climate change will impact on the UK's future climate, impacts of climate change on people and landscapes in UK, range of responses to climate change in the UK at a local and national scale. (p.15)	Climate change has consequences. Summary of a range of consequences of climate change currently being experienced across the planet. (p.12)
Deforestation	Deforestation has economic and environmental impacts.' 'Value of tropical rainforests to people and the environment. Strategies used to manage the rainforest sustainably – selective logging and replanting, conservation and education, ecotourism and international agreements about the use of tropical hardwoods, debt reduction. (p.12)	Economic and social causes of deforestation: How economic change is increasing inequality in the city and the differences in quality of life. (p.18)	—

5.2.1. *The positioning of environmental education within the subject of geography*

The KS3 geography Programme of Study (Department for Education 2014) is a slim 3-page document. The document states that students should understand the key processes (e.g. weather and climate, urbanisation) through place-based exemplars but on the whole is apolitical in tone. References are made to climate change, both naturally occurring and as a product of human activity, but little attention is given to issues of environmental improvement, or how ameliorative

steps might best be enacted. Overall, the Programme of Study is best described as having a focus on subject acquisition, that is a focus on learning *about* the environment, with learning *in* the environment featured only in terms of geographical skills (e.g. field work).

The Programme of Study is interpreted by individual school geography departments in several ways, resulting in varied schemes of work. Most of these school-based policies reflect Stevenson's *conservative reform*: the documents focus on teaching the facts about the issues, which are themselves couched in the languages of science or economics. However, despite curriculum guidance, four departments embedded a more critical approach to learning, seeking to teach environmental content through an exploration of multiple perspectives. Two departments had taken this further, in ways that are indicative of Stevenson's *radical reform*, by ensuring that whilst students learn *about* the issues, such as flooding, renewable energies and climate change, they were also encouraged, and empowered, to consider their own role and their future actions more broadly. For example, one school created a unit termed 'Climate Change' with the overarching aim for students to reflect on both personal and collective impacts and responsibility:

To understand how we (I) cause climate change, how it will affect us (me) and the world and what are our (my) responsibilities. (KS3 Scheme of Work)

All department schemes included 'field work' as directed by the National Curriculum. These activities were mainly planned for the school grounds (e.g. sampling flora) or local vicinity (e.g. interviewing local people), hence a strong purpose alignment with education *about* the environment, that is skill development, with a context of being *in* the environment.

Geography is only mandatory up to the end of KS3. Many schools now commence the study of GCSEs in Year 9, rather than Year 10, leading to many students only studying Geography for 2 years during KS3. In addition, the subject only receives 1–2 h of curriculum time per week (compared to 3–4 h for science). Further, only 50 per cent of students opt to continue their studies of geography to GCSE (Carroll and Gill 2017). With no KS4 Programme of Study, geography departments' schemes of work followed the content as established by the examination specifications. Consequently, the power examination boards have to shape the environmental education students experience is significant. Importantly, there is some noteworthy variability in how the boards have responded to an already marginalised subject. Hence, Table 1 compares the aims and the specifications objectives/statements of the three examination boards for three topics associated with environmental education: energy management, climate change, and deforestation. Whilst the distinctions here were nuanced, the variability of the specifications can be seen in their ideological framing, in their positioning of humans, and in their conceptualisations of climate change.

As Table 1 illustrates, GCSE geography programmes can be predominantly characterised as presenting a *conservative* vision (Stevenson 1987/2007) of environmental improvement: they convey issues as solvable either through a technological fix, or by amending legal, political and economic decision making. The AQA syllabus, for example, describes energy conservation as:

designing homes, workplaces and transport for sustainability, demand reduction, use of technology to increase efficiency in the use of fossil fuel. (AQA 2016a, 23)

However, Edexcel's (2016a) specification also includes more socially critical approaches in that they regard environmental crises as indices of society's larger problems. For example, learners were encouraged to consider and critique the social and societal consequences alongside economic outcomes. Thus, the educational objective for the topic of deforestation is:

Economic and social causes of deforestation: How economic change is increasing inequality in the city and the differences in quality of life. (Edexcel 2016a, 18)

Concerning the positioning of humans, the human relationship with the ecosystem took a range of forms across the specifications. For example, Edexcel (2016a) presents humans, and

specifically the geography students, as citizens who *understand* the environment without necessarily advocating for it:

Geography enables young people to become globally and environmentally informed and thoughtful, enquiring citizens. (p.6).

This compares to OCR (2016a) which takes a non-critical approach to learning about the environment. For example, the student is placed in a subordinate role as one to ‘appreciate’ and ‘study’ the world:

Learners will study in depth the diverse and dynamic geography of the UK. They will gain an appreciation of the changes to the UK’s geography and the processes which drive them. This will include the study of the natural landscapes which define the UK, the people of the UK and the environmental challenges facing the UK. (OCR 2016a, 9)

Finally, AQA (2016a) which offers no mention of activism, or learning *for* the environment, and instead suggests that humans are at war with the natural world:

This exciting course is based on a balanced framework of physical and human geography. It allows students to investigate the link between the two themes, and approach and examine the battles between the man-made and natural worlds. (AQA 2016a, 3)

Further variation between specifications concern the concept and conceptualisation of climate change and society’s response to climate change. It is widely argued that climate change is the most important and challenging social, economic and environmental issue of our time (IPCC 2018). Whilst all the geography programmes include climate change, the nature and the depth to which the issue is tackled vary considerably. As an illustration of this variance, OCR refers to climate change on only four occasions, AQA on six occasions, whilst Edexcel includes references to climate change 13 times. Whilst these numbers are, to some extent, arbitrary, what they reflect is the amount of space dedicated to the issue of climate change – with OCR offering the least and Edexcel the most. Interestingly, the variation in coverage between specifications is also echoed in their portrayal of humans in relation to climate change. Thus, while Edexcel unequivocally states ‘Global climate is now changing as a result of human activity’ (2016a, 12), OCR expounds a less emphatic message regarding anthropogenic causation: ‘There are a number of possible causes of climate change’ (2016a, 12).

Finally, both AQA and Edexcel specifications list strategies to mitigate climate change whereas OCR makes no mention of this. Methods listed for climate change amelioration focus on technology developments and changes in international law: the two types of reform which Stevenson (1987/2007) characterizes as *conservative*. More positively, Edexcel highlights the socially critical role that individuals and local communities can play. Interestingly, none of the specifications make reference to the UN’s Sustainable Development Goals (SDGs) or the UN’s Framework Convention for Climate Change (UNFCCC) which suggest that these initiatives are seen as issues beyond, or separate to the concerns of geography education, or perhaps seen more as international policies, rather than as key political directives within England that teachers might choose to introduce independently.

5.2.2. *The positioning of environmental education within the subject of science*

Turning our attention now to policies directing secondary school science in England, we see set over 13-pages, the KS3 science Programme of Study’s four sections: working scientifically: biology; chemistry; and physics (DfE 2014). Here, environment-related topics are located, in a limited capacity, across the biology and chemistry sections. In the biology section, environment-related statements are: ‘independence of organisms in an ecosystem’, ‘how organisms effect, and are effected by, their environment’, and ‘the importance of maintaining biodiversity’ (DfE 2014, 7). The emphasis is on understanding the interrelationship between living and non-living things and

their dependence on one another. The purpose for these biology-related themes, can thus be seen as learning *about* the environment. In the chemistry section, environment-related statements are: 'earth as a source of limited resources and the efficacy of recycling' and 'the production of carbon dioxide by human activity and the impact of climate' (DfE 2014, 9). Here, again, the purpose is one of learning *about* the environment: no attempt is made to frame content with the purpose of engaging in learning *for* the environment. Significantly, and further to the discussions developed above regarding the explicit inclusion of content relating to the amelioration of climate change and other environmental issues within the geography PoS, the specific terms of climate change and sustainable development are absent throughout the entirety of the science document.

In practice, school science departments' KS3 schemes of work and the published textbook they use, follow the science Programme of Study resulting in similarly restricted exposure to environment-related issues that focus on content coverage, rather than any learning *for* the environment. Furthermore, the coverage of such issues is limited in time: the total amount of allocated teaching time to cover biology environment-related content focuses on feeding relationships, predator-prey relationships, organism competition and adaptations is 8–14 hours across the entirety of KS3. Several schools, however, do include some field work lessons constituting learning *in* the environment, although the primary purpose of most activities is to meet the requirement for working scientifically stipulated as 'use (ing) appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety' (p.4).

The chemistry environment-related content is similarly limited. That is to say, on average across KS3, 5 hours of lessons are focused on environmental chemistry. For example, an 8-hour Year 8 (12–13 years) scheme of work for the module titled 'earth and resources', assigned one third (approximately 20 min) of the penultimate lesson on 'reducing the impact of combustion on the environment'. However, there was one example whereby a science department had created a 21-hour Year 8 module titled 'energy changes and energy resources' combining the topics: energy, energy resources, photosynthesis, respiration and sustainability. This final topic of sustainability, planned for 2-hours, focused on understanding the scientific research and the future technologies related to the problems of pollution, global warming, over-population and non-biodegradable waste. Clearly, this again focused on learning *about* the environment and, using Stevenson's typology, this approach was strongly aligned with 'technical' improvement.

Unlike geography, a science Programme of Study in England is mandated at KS4. The document is 18-pages in length. Building on KS3 environment-related topics, there is again an emphasis on 'the importance of maintaining biodiversity' and 'material recycling'. The term 'climate change' is explicit but, as detected in the geography GCSE specifications, an element of caution is introduced concerning its legitimacy, where students are asked to study: 'evidence, and uncertainties in evidence, for additional anthropogenic causes of climate change' (DfE 2014, 13). In this way, the purpose is primarily focused on learning *about* the environment. However, the KS4 Programme of Study does invite more criticality regarding scientific and technological developments, for example encouraging deliberation of 'positive and negative human interactions with ecosystems' (p.9) and 'ethical considerations of modern biotechnology' (p.10). That said, there is no reference to science (outcomes) in terms of social, environmental or political justice, be it either as positive or negative impacts. Further, with respect to learning *for* the environment, the call for environmental advocacy remains absent – again here the focus rests on learning *about* the environment.

Whilst the science KS4 curriculum clearly shapes the science GCSE programmes, variation was observed between examination board approaches to environment-related themes. Table 2 compares the three examination board objectives/statements for the topics: energy management and climate management, two topics that align closely with environmental education. As an (important) aside, we note here the highly problematic use of the term 'management', rather

Table 2. Instances of environment-related education within science GCSE specification.

Content	AQA 2016b (8465)	Edexcel 2016b (1SC0)	OCR 2016b (J260)
Energy management	Describe the main energy resources available for use on Earth (including fossil fuels, nuclear fuel, biofuel, wind, hydroelectricity, the tides and the Sun); Evaluate the use of different energy resources, taking into account reliability, cost and impact on the environment. (p.127)	Describe the main energy sources available for use on Earth (including fossil fuels, nuclear fuel, bio-fuel, wind, hydroelectricity, the tides and the Sun), and compare the ways in which both renewable and non-renewable sources are used. (p.51)	Citizens are faced with complex choices and a variety of messages from energy supply companies, environmental groups, the media, scientists and politicians. Some maintain that renewable resources are capable of meeting our future needs, some advocate nuclear power, and some argue that drastic lifestyle changes are required. Decisions about energy use, whether at a personal or a national level, need to be informed by a quantitative understanding of the situation. (p.92) Decision about the use of crude oil must balance short-term benefits with the need to conserve this resource for future generations. (p.64)
Climate management	Climate change: impacts and mitigations: Steps can be taken to mitigate the effects of climate change by reducing the overall rate at which greenhouse gases are added to the atmosphere. Examples of mitigation include using energy resources more efficiently; using renewable sources of energy in place of fossil fuels (see Resources of materials and energy); reducing waste by recycling; stopping the destruction of forests; regenerating forests; developing techniques to capture and store carbon dioxide from power stations. (p.62)	Evaluate the evidence for human activity causing climate change Describe that these effects may be mitigated: consider scale, risk and environmental implications. (p.52)	Scientists aim to reduce emissions of greenhouse gases, for example by reducing fossil fuel use and removing gases from the atmosphere by carbon capture and reforestation. These actions need to be supported by public regulation. Even so, it is difficult to mitigate the effect of emissions due to the very large scales involved. Each new measure may have unforeseen impacts on the environment, making it difficult to make reasoned judgments about benefits and risks. Describe how the effects of increased levels of carbon dioxide and methane may be mitigated, including consideration of scale, risk and environmental implications. (p.52) Decisions about protecting and conserving biodiversity are affected by ecological, economic, moral and political issues. (p.47)

than, for example, climate change mitigation and adaptation, which again reinforces an anthropocentric discourse.

Applying Stevenson's typology to these extracts, GCSE science programmes are, for the most part, dominated by a *conservative* vision for environmental improvement. Perhaps it is not surprising that in the study of science, technical responses to environmental problems are privileged. For example, the AQA syllabus states:

Examples of mitigation include: using energy resources more efficiently; using renewable sources of energy in place of fossil fuels (see Resources of materials and energy); reducing waste by recycling; stopping the destruction of forests; regenerating forests; developing techniques to capture and store carbon dioxide from power stations. (AQA, 2016b, 62)

However, looking closer at the OCR science programme and particularly at the topic of energy management (see Table 2), students are invited to consider environmental improvements beyond technological advances and political approaches. That is, the specification calls for scientific progress to be understood from local and national levels alongside multiple perspectives (including supply companies, media, environmental groups). Uniquely, the programme introduces students to the possibility of more radical environmental reforms by encouraging students to consider alternative approaches in the form of 'drastic lifestyles changes' (OCR 2016b, 92).

In examining the geography and science curriculums, schemes of work and examination specifications, environmental education is normatively positioned as learning *about* the environment, rather than enabling advocacy, or education *for* the environment. Where found, the discourse concerning environmental improvement is one of *conservative reform* and in the main focuses on technical (scientific) improvements. Where there were some differences, these were acknowledged as a result of the power that examination boards wield over the direction of the specification content, which was more evident in geography which has no National Curriculum requirements at KS4 in England. Whilst subject teachers respond to the demands of their discipline, in tandem to these, policies set out by Local Authorities and MATs also influence classroom practice to which we now turn.

5.3. Local policies by multiple academy trusts (MATs) or schools

None of the sampled local government authority (LA) websites included an aim to ensure environmental education for young people in their mission statement or organisation's objectives. Rather, when environmental education related offers were evident, they were set within the broader context of 'learning outside the classroom'. For example, LAs offered 'outdoor learning' professional development sessions at local nature reserves, they promoted local education providers for school student visits and offered weblinks to external provider's 'Education for Sustainable Development' teaching resources. Furthermore, none of the MAT, or school, websites included in their aims/mission statements any reference to environmental or sustainability issues. Rather, the majority of MAT websites statements were concerned with developing 'outstanding', and in one case 'competitive', students. There were two exceptions to this, however, where MATs had highlighted the importance of societal needs alongside individual needs in their school ethos. For example:

Academies based upon social responsibility, honesty, equality and consideration for others (MAT Website).

In another MAT both economic drivers and wider responsibility were interwoven:

We will enable the children and young people who prepare for and attend our academies to participate in learning and developing skills and attributes necessary to participate fully in the local, regional, national and emerging global economies, whilst maintaining a sense of place, citizenship and commitment in their community, developing their environmental and social responsibility.

Thus, the MATs/LAs included in the sample could be seen to embody what was recognised in other policies, reflecting the dominance of economic and individualistic drivers and a pervasive lack of attention to environmental education.

In sum, our review suggests that environmental education across secondary schools is patchy and restrictive. In using the theoretical frameworks of Lucas and Stevenson, we have identified that environmental education seems to be shaped by a discourse of learning *about* the environment, with limited opportunities for learning *for* the environment, or opportunities to learn both *for* whilst *in* the environment. In terms of how environmental improvement is conceptualised, technical solutions have centre stage, which Stevenson terms as *conservative reform*, with limited space given to alternative framings, such as opportunities to critique more generally human's relationship with the planet. Broadly, the findings highlight that young people's environmental

education is dependent on their subject choices and the examination specification. Moreover, analysis shows that young people have only a compartmentalised rather than systems approach to responding to environmental issues. Some aspects fall into geography, others into science. And whilst other school subjects – such as religious education and design and technology – do offer opportunities for alternative framing, it is geography and science that have greater reach in both their closer subject alignment and allocation of curriculum time. As a consequence, environmental education currently in England navigates a very narrow landscape, denying students the potential rich fruits of learning it has to offer.

6. Discussion

In documenting changes in environmental education policy in England and the enactment of current policies at national and local levels, we highlight three key challenges facing environmental education. Here we discuss each challenge and possible responses to help progress the field of environmental education policy.

6.1. The wider societal economic context

First, environmentally focussed policies of all kinds are directly affected by the economic context. Indeed, as Carter (2014) has noted, in response to global austerity, and when voters experience cuts to social funding such as health, social care and housing, the financing of initiatives that promote a 'greener' society may become politically less urgent. Equally, and as Gillard (2016) has described, in the shadow of a global recession, notions of, for example, subsidising home insulation or implementing the wider use of solar panels is perceived to be costly and contentious. As is clear from the analyses above, environmental education has historically been wedded to political cycles and ideologies, and this continues today. That is, contemporary economic priorities, rather than environmental advocacy, are evident in national and local education policies related to the teaching of geography, and science. In the discipline of geography, prescribed content areas concerned with environmental understanding are primarily descriptive, mechanistic, apolitical, and communicate little about environmental improvement. Geography policy can be typified as enacting *conservative reform* messages. Apart from Edexcel's socially critical approaches there is limited attempt to explore alternative thinking or encourage environmental activism, or advocacy, that is *for* the environment. Similarly, in science education policy, the teaching of environment-related topics is strongly aligned with notions of technical improvements and the role of new technologies in boosting economic productivity. The amelioration of environmental issues, if addressed at all, are seen to lie in the domain of *conservative reform* through technical or legal mechanisms. So, for example, rather than exploring more creative, but potentially challenging, mitigation approaches to climate change that call on students to question societal values, the current curriculum is focused more towards debating whether anthropogenic climate change exists. The immediate economic well-being of the nation, and by extension the individual, thus outweighs longer-term, and broader thinking relating to the well-being of the environment, now and in the future. In times of financial austerity, emphases within policy that support learning *for* the environment are clearly off the agenda.

In reflecting on the relationship between economic drivers and the fate of environmental education policy, we propose that advocates of environmental education might consider highlighting the benefits to a populace whose economic prosperity was directly linked to the application of environmental understanding, i.e. the Green Economy. Scholars have already noted the potential economic (and social) value of the green economy based on developing technical solutions to environmental issues (Huckle 2010). Whilst the learning framework supporting such an economy would still be described, in Stevenson's terms, as *conservative reform*, we note that the

need to think in terms of future needs (in order to retain or grow the green economy) would necessarily invite thinking characterised by more *radical reforms*.

In practical terms, this focus on a Green Economy could result in the environment shifting from the shadows, acting as a stimulus for integration across the curriculum and the school community. Further, environmental education should be examined explicitly. This would be, for individuals, through formal exams, and for schools, during whole school inspections where a Green Economy would become a formal standard on the inspection framework. This is all achievable, as with the increased prioritisation of work-related qualifications and the call for career literate students (Department for Education 2018), the Green Economy could act as a vehicle to raise the visibility of environmental education.

Whilst being pragmatic, we are simultaneously alert to the hypocrisy of this solution in supporting, rather than challenging, the capitalist/market-led status quo which 'exacerbates inequities, damages the environment and undermines education' (Hursh and Henderson 2011, 172). Indeed, we accept, and echo the concerns of Derby, Piersol, and Blenkinsop (2015, 381), who underline how the powerful elite 'target environmental discourses in education in order to marginalize alternative conceptions and limit debate'. That is, we recognise that the unique position that environmental education offers as a key area for debating the limits, costs and consequences of the pervasive capitalist model, and alternative ideologies should not be side-lined or 'green washed'. Rather this initial policy response could only act as a temporary bridge, to support or from which to launch the necessary wider debate as to the purpose of schooling, a point we turn to below. Therefore, by positioning the Green Economy at the forefront of the transition to a deeper and richer environmental education, we argue that the necessary knowledge, skills and habits of mind that are required to create the visions needed for a net-zero carbon society will have the opportunity to grow. That is the skills, training and employments, currently unimagined will be able to legitimately take root, becoming commonly accepted across all sectors.

6.2. The purpose of schooling and alignment with environmental issues

The second conclusion to be drawn from our analysis concerns the inexorable mismatch between the wider structures and aims of schooling, and the socially critical goals of environmental education. As Stevenson (1987/2007) notes, schools originally were designed to maintain the social order: the policies they follow and adopt reflect mainstream beliefs and knowledge systems 'which emphasise the passive assimilation and reproduction of simplistic factual knowledge and unproblematic "truth"' (p.140). That is, state schools are governed by embedded capitalist/market-led ideology, meaning, of course, few teachers would accept the charge that they simply deliver content to be passively assimilated by students without any problematisation of issues and discussion. And indeed, all of the reviewed pedagogic materials – the National Curriculum, exam specifications, disciplinary programmes of study, and individual schemes of work – refer to the importance of learners developing skills of critical thinking. However, the current framing of environmental content within geography and science does not favour radical approaches to environmental mitigation: curricula do not address social, environmental or political justice, or a call for environmental advocacy or indeed action – rather the focus remains on learning *about* the environment. And whilst other subjects, such as religious education and citizenship might offer opportunities for these more progressive discussions, due to the important place that science and geography has in the curriculum they must also include these multiple and varied perspectives. Furthermore, current policies within assessment frameworks may act to curtail opportunities for learners to engage in environmental justice efforts as part of their accredited education. Whilst the broader aim for geography and science education involves learners applying skills of critical thinking to an acquired body of knowledge, learners are not encouraged to apply their new perspectives in practice.

A clear recommendation arising from this conclusion would be a call to develop tools that enable the assessment of environmental advocacy and activism. In referring to tools, we also include the need to re-examine the purpose, process, as well as the methods of school assessments for capabilities, that include environmental advocacy (for a richer discussion see Greer et al. (under review)), alongside the necessary resourcing to reflect its new found status.

6.3. *The purpose of environmental education*

Third, in reflecting on the *conservative* framing of environmental education, its lack of status across the policy landscape, the absence of opportunities to learn *for* the environment, maintained by the deficiency of appropriate assessment, we note that there is a further conceptual issue which requires consideration. That is, whilst Stevenson's and Lucas' framings of environmental improvement and environmental education provide useful analytical lenses, for example, shining a light on the *radical* and *for*, they stop short of exploring how different elements might (or might not) combine to enable a richer and, perhaps more purposeful education.

Here, we have found Vare and Scott (2007) perspective on education policy helpful, in their case, pertaining to ESD. Vare and Scott argue that an approach which promotes informed behaviours and facilitates change *for* sustainable development in the here and now would potentially limit learners' abilities to think critically and examine the contradictions in current practices. They argue that this makes learners less able to make sound choices in the face of an uncertain future. In other words, education *for* is not enough. Vare and Scott (2007) call on educational efforts to not only include the *what* (i.e. learning *about*) and the *how to* (i.e. learning *in*, and also learning *for*) but to also consider the *why*.

Asking *why* matters. It indeed roots an education. By encouraging policymakers, across all levels, to prioritise this question during the process of policy formation, the outcomes will more likely centre around the complex but critical issues that, although unresolvable in themselves, will require short, medium- and longer-term responses. It is the question of *why* that has driven the student global climate strikes/school walk outs. The voices from the ground are calling for a political response. That is, young people are asking *why* they should be in school if their education will not serve them to tackle future challenges including, climate change, biodiversity loss or air pollution degradation. And *why* should they listen to adults when evidence clearly suggests that adults are failing them? And *why* persist with schooling if the planet they inherit will be irreversibly damaged?

This call for the *why* speaks to the need for environmental education policy to steer wider thinking. It calls for cross-ministry discussions, where issues of environment and education are no longer siloed; rather the environmental/environmental education agenda should stand at the heart of all ministries. This call includes the ministries concerned with Health and Welfare, Pensions and Work, and Business, Enterprise and Industry. That is, for the environment to matter it needs to be reflected in the round.

Our call for holistic political engagement is not unique. Indeed, in considering the UN's Sustainable Development Goals (SDGs) which incorporate many of the desired outcomes of environmental education, we see similar structures acting as barriers and a similar call for environmental vision and leadership (even though we do not agree with the sentiment captured by the term sustainable development):

Sustainable Development Goals represent a positive and ambitious commitment to develop sustainably from this generation to the next. We will only achieve the Goals if the Government provides strong leadership and a high level of ambition from the very top - something which has been lacking. There is no voice at the top of Government speaking for the long-term aspirations embodied in the Goals and the interests of future generations. In order to address this accountability gap the Government should appoint a Cabinet-level Minister in the Cabinet Office with strategic responsibility for implementing sustainable development, including the Goals, across Government (House of Commons Environmental Audit Committee 2017, 3).

7. Conclusion

Environmental education in England is constrained by the national curriculum and schooling policies, and all that these entail, including assessments, structures and processes. However, we argue that changes across the board are possible and recent history of curriculum change discussed earlier has taught us that change can be rapid. In the past, the purpose of education, and environmental education, has been driven predominantly by economics and the political cycles. However, through the 2018–19 youth strikes, education is being challenged on environmental grounds by the people who are closest to it. This current period is offering rich opportunities for student collaboration within their local communities alongside external organisations, such as NGOs. By mapping past events and distilling political relationships we can come to understand where we are today and how it came to be. Identifying the key levers and constraints in education policy offers a starting point to envisage and set in motion a future vision for environmental education for secondary schools not just in England but elsewhere. Whilst we acknowledge that in signposting the changes we consider are required could act as a hinderance by constraining the possibilities that eventually support the necessary paradigm shift, we argue that in the short term there is value in doing so. Our case is that, in using the Green Economy argument during this current period of change, we may bridge these old and new worlds, and act as a springboard to a new educational approach. Alongside this, a longer-term root and branch revisioning of the curriculum, should centrally assert the *about*, *in* and *for* the environment, driven by the question of *why*.

Whilst completing this review of national policies we have witnessed, through the youth climate strikes, a shift in momentum. How young people experience environmental education policy in our schools today - as inadequate - has the potential to shape future policies as these people, failed by current policy, rise up and call for something better. As the youth activist Greta Thunberg succinctly puts it:

Why should we be studying for a future that soon may be no more when no one is doing anything whatsoever to save that future? And what is the point of learning facts in the school system when the most important facts given by the finest science of that same school system means nothing to our politicians and our society (Thunberg 2018).

Notes

1. Education provision, curricula and assessment in the UK are the responsibility of each devolved nation.
2. It was noted that the OCR GCSE 'Environmental and land-based science' had been recently withdrawn, with the final exam in summer 2018. Also, the AQA GCSE 'Environmental Science' has since been withdrawn, with the final examination in summer 2017.

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