

# Engaging the Next Generation

The state of environmental, sustainability and climate education in UK schools and effective practice in the classroom



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# FOREWORD

The trustees of the National Association for Environmental Education (NAEE) commissioned this report for a number of reasons. Firstly, we were aware that Ofsted had produced a number of subject-focused reviews of the research literature which had been very popular (in terms of downloads, at least) with teachers, school leaders and governors. It seemed obvious to us that a review that looked at interdisciplinary areas such as environmental, sustainability and climate change education might be equally useful, if not more so. Secondly, we wanted to provide a review of research and, thus, practice that reflected the UK context and not just England – that is, after all, the remit of NAEE. Thirdly, we knew that practitioners, who work with schools, need and want an up-to-date summary of research findings with some guidance about what “best practice” might look like. So, we approached Isobel and Bill to carry out the review knowing that they could be trusted to produce a document that is authoritative, useful and easy to read. We are grateful to them, and to the advisers, for rewarding our trust with such an excellent report.



**JUSTIN DILLON**

National Association for  
Environmental Education

By midnight tonight, around 1,600 babies will have been born in the UK. They, and all the other young people who will start school in a few years, will face a world that is very different from the one their teachers and their parents grew up in. We owe it to them to provide the best possible education so that they feel confident to adapt to the changing environment and competent enough to make a positive difference. We owe it to them to provide a better education than many of us received. We know that schools, teachers and those working in out of school settings have enormous responsibilities in this regard and deserve the best possible support – we hope that this report helps.

Prof. Justin Dillon  
President, NAEE



# EXECUTIVE SUMMARY

This report, commissioned by the UK National Association for Environmental Education (NAEE), explores effective practices in delivering environmental, sustainability and climate education in schools across the United Kingdom. Drawing on a comprehensive review of academic and grey literature, as well as relevant case studies, the report identifies key factors that contribute to high-quality educational experiences for young people in the UK.

The importance of environmental, sustainability and climate education is clear, as it fosters positive environmental attitudes, critical thinking skills, student engagement, and personal development. In the UK, recent policy developments, such as the Department for Education's Sustainability and Climate Change Strategy in England and curriculum reform in Wales and Scotland, have highlighted the growing emphasis on this area of education.

Key effective practices for teachers to apply in their teaching include:

- Implementing cross-curricular integration of environmental topics across subjects such as maths, languages, and physical education to facilitate a holistic understanding of sustainability issues.
- Providing hands-on activities, real-world problem-solving, engagement with local sustainability issues, and political participation to support experiential, action-oriented learning and foster youth agency.
- Utilising community and outdoor learning opportunities, such as field trips, nature connection activities, and partnerships with local organisations, to ground environmental education in the natural world, improving educational outcomes and students' mental and physical well-being.
- Engaging with international case studies and cultural perspectives, especially in terms of the interconnectedness of local lifestyles with ecological systems, to expand learners' global perspectives.

- Addressing the social dimensions of environmental challenges, including issues of justice, equity, and power dynamics, to empower students to design equitable solutions.
- Linking environmental education with STEM subjects through hands-on experiments and sustainable design principles to increase exposure to 'green' career pathways.
- Cultivating partnerships with environmental charities, conservation agencies, outdoor learning centres, and sustainability-focused businesses to enhance expertise, resources, and local context.
- Adopting whole-school approaches to sustainability and utilising resources supporting school climate action planning to build environmental awareness into both the curriculum and school operations.

The report presents four case studies illustrating effective practices in action: the Eco-Capabilities project in England, which combines arts-based research and outdoor learning; the Polli:Nation programme's impact in Scotland, focusing on biodiversity understanding and conservation action; the You & CO2 project in Wales, utilising technology and interactive narratives to explore climate change concepts; and Eco-Schools in Northern Ireland, where the whole-school sustainability programme achieved an early milestone and continues to make an impact.

By implementing these effective practices and learning from successful initiatives, teachers can enhance the quality of environmental, sustainability and climate education in UK schools, equipping young people with the knowledge, skills, and values necessary to become environmentally conscious and engaged global citizens.

The report ends by examining some of the challenges that educators face in implementing effective practices, and concludes with recommendations that could help overcome some of these barriers.

## BOX 1: RECOMMENDATIONS

For Policy Makers in the four nations of the UK:

- Develop comprehensive national strategies for environmental, sustainability and climate education that set clear targets, provide adequate funding, and cohere across all four nations of the UK.
- Focus on cross-curricular integration and experiential learning to support the inclusion of environmental, sustainability and climate education as a core component of national curricula.

For Senior Leadership Teams, Governors and Multi-Academy Trusts:

- Prioritise teacher training and professional development in environmental, sustainability and climate education, ensuring that all educators have the knowledge, skills, and confidence to deliver high-quality learning experiences.
- Foster community partnerships with local environmental organisations, businesses, and institutions to enhance learning opportunities and resources for students.

For Teachers:

- Engage in continuous professional development to stay informed about effective practices and innovations in environmental, sustainability and climate education.
- Utilise technology and media to create engaging, interactive learning experiences that connect students with global perspectives and real-world challenges.



For National and Local Environmental Organisations:

- Foster partnerships with teachers, schools and multi-academy trusts to ensure that your resources and experiential learning opportunities are used most effectively to enhance and challenge learners' formal education.

For Learners:

- Actively seek out and engage with diverse sources of information on the environment, the climate and sustainability, including scientific reports, news articles, and community initiatives
- Participate in extracurricular activities, clubs, or youth groups focused on environmental and sustainability issue to gain practical experience and develop leadership skills
- Connect with peers locally and globally to share ideas, experiences and effective practices for addressing environmental challenges in your communities

For Researchers:

- Conduct rigorous evaluations and research to identify the most effective strategies and approaches for environmental, sustainability and climate education, with a focus on measuring long-term impact and behaviour change.
- Collaborate with educators, policymakers, and community partners to develop evidence-based curricula and resources that are culturally relevant, socially just, and scientifically accurate.

*Fridays for Future, Folkestone, Kent*  
© Andrew Aitchison



# 1. Introduction: Setting the context for environmental education in UK schools

South Farnborough Infant School, Hampshire © Andy Aitchison

## 1a. Background of environmental, sustainability and climate education

Environment, sustainability and climate education has gained significant prominence in recent years as societies worldwide grapple with the complex challenges posed by climate change, biodiversity loss, resource depletion, and environmental degradation[1].

Environmental education and sustainability education are overlapping concepts that are often used interchangeably[2]. As concern over the implications of the climate crisis mount, the need to highlight 'climate' explicitly in environmental and sustainability education has become pertinent[3]. In this review, environmental, sustainability and climate education is broadly defined as a process that helps individuals, communities, and organisations to learn about, in and for the environment, including the development of knowledge and skills necessary to sustain, protect and improve the natural world. In particular, this review focuses on effective practices in delivering environmental, sustainability and climate education in schools in the UK, drawing on the evidence available. It is worth noting that many of the core skills and concepts within this field of education are equally relevant to education within other subjects, and the aims of education more broadly, making the research included here pertinent not only to environmental, sustainability and climate education but also to the future of a flourishing education system in the UK more broadly.

For a more detailed exploration of the history of environmental, sustainability and climate education, see [naee.org.uk/blog](http://naee.org.uk/blog).



## 1b. Importance of environmental, sustainability and climate education

Environmental, sustainability and climate education plays a pivotal role in fostering positive environmental attitudes and creativity[4], developing the skills, including critical thinking, necessary to address future issues[5], generating student engagement, academic achievement[6], and personal development and well-being[7]. Extensive research underscores the manifold benefits of this variety of education, including heightened environmental knowledge, pro-environmental attitudes, and a greater sense of environmental

[1] Scott (2020)

[2] Acosta Castellanos and Queiruga-Dios (2022)

[3] Adger et al. (2013); Wheeler and Von Braun (2013)

[4] Song (2010); Ballard et al. (2017)

[5] Genc (2014); Orr (1992); Palmer-Cooper (2009)

[6] Archie (2003); Hiller and

Kitsantas (2014)

[7] Dettweiler et al. (2017); Zylstra et al. (2014)



stewardship[8]. Through experiential learning and hands-on activities, learners can be equipped with practical skills to adopt sustainable lifestyles and advocate for environmental conservation[9]. Furthermore, environmental and sustainability education is shown to contribute to cross-disciplinary learning, enhancing students' cognitive flexibility and fostering connections between diverse subjects[10]. The advantages of environment, sustainability and climate education in nurturing environmentally conscious and engaged global citizens are multifaceted and numerous. This report contains four case-studies that demonstrate its importance in the UK and beyond.

### 1c. Environment, sustainability and climate education in the UK

The school curriculum in England is the responsibility of the UK Government. Scotland, Wales and Northern Ireland are responsible for setting their own education policies.

In 2022, the UK Department for Education launched its Sustainability and Climate Change Strategy[11]. The overarching aim of this strategy is to establish the education sector in England as 'world-leading' on sustainability and climate change by 2030. There are five action areas to the strategy, including climate education, green skills and careers, the education estate and infrastructure, operations and supply chains, and international collaborative working and trade opportunities. Critiques levelled at the strategy have noted a lack of focus on action and participation in social and civic change, as well as an absence of values or any mention of global inequality and injustice[12]. Additionally, the strategy currently puts an emphasis on

science, geography and citizenship, which undermines the cross-curricular and interdisciplinary approach that teachers indicate they would prefer. Lastly, there is little mention of how the 'effective practice' that will inform teacher professional development will be identified and whether it will be based upon rigorous and robust research. Dunlop and Rushton's[13] analysis of the policy, amongst others, finds that it still 'foregrounds economic concerns, with educational priorities driven by the "net zero" policy agenda, and an over-reliance on increased science-focused knowledge and skills'. They argue that this strategy fails to recognise the inherently political nature of climate change and sustainability.

Despite these critiques, however, the strategy represents a marked change in the status of environmental, climate and sustainability education in England[14]. Scotland and Wales have been noted previously to have a greater policy emphasis on environmental, climate and sustainability education than England and Northern Ireland[15]. Wales introduced curriculum reforms in 2022 that state that environmental education should be taught across all the 'Areas of Learning', with explicit reference to environmental issues in the guidance for Science and Technology and Humanities, and scope for schools to develop their own curriculum in response to local needs[16]. The context of these reforms was the innovative Well-being of Future Generations Act of 2015, which provides a legal framework in Wales for representing the interests of future generations and sustainable development[17]. Huckle critiqued the curriculum reforms as lacking a coherent theory of knowledge, advocating that educators should draw on critical realism – which contends we can only understand the

world 'relationally, holistically and systemically'[18] – when delivering environmental education in Wales.

[8] Cheng and Monroe (2012); Hungerford and Volk (1990)  
 [9] Corcoran and Wals (2004); Lotz-Sisitka et al. (2015)  
 [10] Wals and Jickling (2002);

UNESCO (2017)  
 [11] Department for Education (2022)  
 [12] Howard-Jones and Dillon (2022)  
 [13] Dunlop and Rushton (2022: p.1083)  
 [14] Glackin and King (2020)

[15] UNESCO (2013)  
 [16] Jones (2023)  
 [17] Senedd Cymru (2015)  
 [18] Huckle (2022: p.35)



Scotland has integrated sustainability into formal education for a decade through the framework 'Learning for Sustainability' (LfS), which incorporates LfS standards in teacher education and beyond, as well as in teaching practices[19]. In Scotland, LfS combines Education for Global Citizenship (ECG), Outdoor Learning, Children's Rights and Sustainable Development Education (SDE) into a set of educator guidelines[20]. Reviews of sustainability education in Scotland have identified the importance of connection to nature and place[21], while also noting that, despite a comprehensive approach, the concept of 'learning for sustainability' is not well understood by teachers[22].

In Northern Ireland, the Council for Curriculum, Examinations and Assessment[23] includes the environment and sustainability in the key objectives, key elements and areas of learning in the statutory curriculum, specifically in the objective 'to develop the young person as a contributor to the economy and the environment', the key element 'education for sustainable development' and through the area of learning 'environment and society'. In May 2021, the Northern Ireland Environment Link (NIEL) (a collective body for environmental groups and charities) published a new strategy and action plan for Education for Sustainability (EfS) which calls for 'Education about sustainability', 'Education delivered through sustainable practice' and 'Education for sustainability'[24]. Local and global citizenship education in Northern Ireland has the additional context of post-conflict, segregated schools, and deadlocked, partisan politics[25].

This report seeks to provide guidance for teachers in the UK on effective practices in environmental, climate and sustainability education. It is important to recognise that policy shapes practice, and therefore the differing policy contexts of England and the devolved nations of the UK does have implications for teachers' practices. There is an emphasis in the report, therefore, on evidence, case-studies and academic literature from the UK. However, effective practice in educating young people about the environment, climate and how to be sustainable also extends beyond geographical boundaries, and therefore where appropriate, case-studies and literature from other countries beyond the UK have been included.

## BOX 2: NAEF MANIFESTO

In 2022, the National Association for Environmental Education released a Manifesto[26] on Young People's Learning and the Environment with 16 commitments for school leaders, teachers, learners and NAEF as an organisation.

Four principles were identified as core to the manifesto:

- **Partnership** is present in every section and includes whole-school decision-making, teachers working together across subjects, pupil and students working together and being involved in curriculum-making, drawing parents and carers into school activities, and working with community organisations.
- **Integrity** involves matching words with deeds, exploring issues from a range of perspectives, being clear about values, and honest and open in admitting uncertainty, and not settling for easy answers.

[19] Clarke and McPhie (2016)

[20] Rushton et al. (2023)

[21] White et al. (2023)

[22] Christie et al. (2019)

[23] Council for Curriculum,

Examinations and Assessment (2020)

[24] Northern Ireland Environment Link (2021)

[25] O'Connor et al. (2020)

[26] NAEF (2022)

- **Building Capacity** is present in every section and relates to the development of the school as a sustainable institution, teacher professional development and curriculum-building, pupil and student learning and skill development, the creation of community-based opportunities for development.
- **Inclusiveness** is found in whole-school decision making, in taking global as well as local perspectives on issues, in having considerations of equity and justice at the core of thinking and practice, and in enabling all subjects to contribute

See the full text of the NAEE Manifesto in the Appendix.

#### 1d. Scope and methodology of this report

In April 2021 Ofsted began publishing a series of research reviews 'to collate currently available research evidence about different subjects'<sup>[27]</sup>. Reviews have been published for Science, RE, Mathematics, Languages, Geography, Music, History, PE, Computing, English, Art & Design. However, there are no plans to review the research on environmental, sustainability and climate change education as it is not currently a standalone subject in the English curriculum. This review seeks to address this gap.

There are a broad and diverse range of approaches to environmental, sustainability and climate education. There is no single way to provide a high-quality education in the subject. The purpose of this review is to identify factors that can contribute to high-quality educational experiences for young people in the UK. We embed this within an examination of how environmental, sustainability and climate education is currently experienced in England's schools. Relevant research and case-studies

from across and outside of the UK are also included, where appropriate.

To summarise, in this review, we:

- provide a brief overview of the national context in relation to environmental, sustainability and climate education (see [naee.org.uk/blog](https://naee.org.uk/blog) for a more detailed history)
- identify effective practices in environmental, sustainability and climate education in the UK
- outline four case-studies of effective practice in this area of education
- put forward recommendations that if realised would not only enhance the quality of environmental, sustainability and climate education but also quality of education in the UK more broadly

This review draws on a range of sources, including a variety of academic and grey literature identified by the authors of this report, specifically sources that explore environment, sustainability and climate education in UK schools. Through this work, we hope to contribute to raising the quality of environment, sustainability and climate education for all young people.

*The Beeches Primary School, Peterborough © Andy Aitchison*





## 2. Effective practices in environmental, sustainability & climate education in the UK

Environmental education can be a powerful tool for change[28]. This section of the report reviews the evidence relating to effective practice in environmental, sustainability and climate change education, so as to inform the success of these endeavours within the UK context.

### 2a. Cross-curricular integration

Research has highlighted that interdisciplinary learning is a powerful way to equip students with the multifaceted knowledge, systems thinking, and critical thinking skills needed to address complex sustainability issues[29]. Exploring environmental topics across subjects such as maths, languages and even physical education helps to facilitate students in grasping the interconnected scientific, social, economic and ethical dimensions underpinning challenges like biodiversity loss or climate change[30]. Hayes[31] notes that taking a cross-curricular approach can help pupils to link in-school and out-of-school experiences together providing a more meaningful and relevant education. Other research has found a connection between taking a thematic educational approach and pupils' attitudes and work habits[32], as well as a higher level of attendance and motivation[33].

In the UK context specifically, a survey of the perspectives of teachers and young people found strong support for a cross-curricular approach to education for environmental sustainability that focuses on: 1) knowledge for action; (2) critical thinking, questioning and data literacy; (3) research, innovation and creativity; and (4) communication and networking[34]. Standalone environmental courses run the risk of compartmentalising ecological literacy and side-lining its relevance to disciplines such as chemistry and politics[35]. Embedding systems-focused sustainability case studies across subjects fosters holistic analysis of causes and solutions[36]. Rousell and Cutter-Mackenzie-Knowles[37] highlight the need for 'participatory, interdisciplinary, creative and affect-driven' approaches to climate change education. They argue that these sorts of approaches are important because they enable children and young people to 'respond to the scientific, social, ethical and political complexities of climate change'[38]. Students can dynamically bridge perspectives from diverse fields to, for example, evaluate how public transportation infrastructure impacts pollution[39], or whether renewable energy adoption correlates with a rise in employment[40]. This helps to contextualise environmental education as a fundamentally cross-cutting entity that traverses diverse academic domains and real-world policy issues.

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[28] Ruiz-Mallen et al. (2009); Ortiz et al. (2018); White et al. (2018); Spooner et al. (2019); Karris et al. (2020)

[29] Liu et al. (2022)

[30] Greer et al. (2023)

[31] Hayes (2010)

[32] Mac Iver (1990)

[33] Jacobs (1989)

[34] Dunlop and Rushton (2022)

[35] Varvaro (2015)

[36] Gillow et al. (2022)

[37] Rousell and Cutter-Mackenzie-Knowles (2020: p.191)

[38] *ibid.*

[39] Science Journal for Kids

[40] TeachEngineering

## 2b. Youth agency and experiential, action-oriented learning

Experiential education through hands-on, active participation in real-world sustainability issues is considered vital for effective environmental learning[41]. Whether through monitoring local air or water quality, designing solutions for habitat restoration, or running school energy audits, grappling with complex socio-ecological dilemmas beyond textbooks enables learners to build critical systems thinking through their embodied experiences. A survey of teachers' perspectives on climate change education in England found that teachers were supportive of action-oriented climate change education that begins at primary age and includes the concepts of social justice and mitigation[42].

Meta-analyses have quantified how immersive environmental education curricula that are place-based nurture resilience, environmental stewardship behaviours and nature connection[43]. Getting students' hands dirty growing native plants for pollinators or calculating home energy budgets develops practical green skills that are transferable to their future lifestyles and careers. Direct sensory engagement sparks observation, curiosity and meaning-making around ecosystems, while collaborative project-based learning encourages peer coaching and collective self-efficacy, enhancing young people's social and scientific agency[44]. Embracing risk, failure and uncertainty through experiential environmental curricula builds confidence and adaptability[45]. As climate disruption increasingly impacts communities, active pedagogies enable youth to viscerally grasp ecological tipping points and contribute to local resilience solutions ranging from community gardens to climate advocacy campaigns[46].

Field trips that facilitate direct contact with nature enable young people to develop a sensory awareness of local flora and fauna and

nurtures their innate biophilia and emotional affinity with the rest of the living world[47]. While study for biology A levels in England provides opportunities for advanced ecological learning, Tilling[48] noted that opportunities to engage in ecology fieldwork within biology teaching have weakened over the years due to a focus on exams, resource pressures and lack of statutory training in ecology fieldwork, amongst other pressures. . As climate change and development continue to degrade natural systems globally, place-responsive ecology and biodiversity education is seen as crucial for inspiring sustainability behaviours and environmental stewardship from a young age[49]. Teaching young people to be able to identify different species, as well as how to carry out wildlife surveys and analyse this data, promotes their scientific literacy and agency to safeguard nature[50]. Tilling[51] advocates for coordination between biology and geography lessons and field trips to provide more opportunities to develop skills related to ecological fieldwork.

Well-designed climate change education aims to build interdisciplinary knowledge on policy incentives and the social movements that are advancing climate action, alongside scientific literacy on the causes and consequences of anthropogenic climate change, including the changes already being experienced[52]. Experiential learning, critical thinking and inquiry-based pedagogies are championed within climate change education for enabling students to analyse the root drivers of emissions at personal, community and societal scales while crafting mitigation responses attuned to justice principles[53]. Educators are called to facilitate climate change education that supports emotional resilience alongside evidence-based understanding, systems orientations and the goal-oriented collective agency essential for young people to be able to confront the escalating climate disruption challenges worldwide[54].



Educators should also make space for supporting youth agency and action competence[55] that extends beyond the curriculum. The school strikes that took place across the world following the first climate strike by then 15-year-old Greta Thunberg are examples of this. Walker[56] writes that as of 2019, 3489 strikes had been registered on the FridaysForFuture website with another 1268 scheduled across 145 countries, with 315 in the UK specifically. Action is a key aspect of climate justice efforts. Kranz et al.[57] write that public-sphere actions relating to climate justice include ‘different kinds of environmental citizenship (e.g. from petitioning on environmental issues, donating to environmental organisations, discussions with politicians, support or acceptance of environmental regulations, and willingness to pay higher environmental taxes) to activist action such as active participation in environmental organisations and organising demonstrations (e.g. climate strikes)’. Student-led, community-based projects are also an effective way of developing student agency while learning about how to bring about change[58]. Trott et al.[59] observe that private-sphere actions (e.g. lifestyle changes) still dominate the literature on climate change education, despite the fact that ‘action for climate justice is more appropriately a public- than private-sphere endeavour, which emphasises collective (rather than individual) responsibility, decision-making, and action-taking to transform systems and spur social change’, and the fact that mitigation and adaptation requires public-scale action.

Research carried out in the UK shows that the underlying motivations for young people to

become climate activists are government inaction[60] as well as concern about the environment and the desire to affect politics, solidarity, social capital and concern for family and future generations[61]. Dunlop et al.[62] argue that there are ‘regimes of obstruction’ that prevent schools in England from better nurturing climate activism, including the legal frameworks on teaching standards, attendance and safeguarding, as well as accountability regimes such as high stakes inspection frameworks, league tables, etc. These will need to be addressed if certain forms of youth agency and action-oriented learning are to be made possible in schools in England in the future.

## 2c. Community and outdoor learning

This theme of effective practice is strongly linked to the theme above. Capitalising on contexts beyond the school walls provides invaluable opportunities to ground environmental education in students’ lived experience and locales[63]. Outdoor learning in urban parks, forests and wildlife areas builds direct experience of local ecological systems, nurturing sustainability values through nature connection while investigating issues like pollution or biodiversity first-hand[64]. Community projects can enable a wide range of real-world learning, for example through tree planting initiatives[65], citizen science data collection on mammal populations[66], or the creation of new public green spaces[67].

Emphasising place fosters young people’s observations of sustainability in action from renewable energy infrastructure to sustainable

[41] Stern et al. (2014)  
 [42] Howard-Jones et al. (2021)  
 [43] Ardoin et al. (2018)  
 [44] Chawla and Cushing (2007); Schusler and Krasny (2010)  
 [45] Ballantyne and Packer (2002)  
 [46] Ojala (2016)  
 [47] Louv (2009)

[48] Tilling (2018)  
 [49] Cutter-Mackenzie and Edwards (2006)  
 [50] Ballouard et al. (2012)  
 [51] Tilling (2018)  
 [52] Ojala (2016)  
 [53] Læssøe et al. (2009)  
 [54] Ojala et al. (2021)

[55] Sass et al. (2020)  
 [56] Walker (2018)  
 [57] Kranz et al. (2022: p.6)  
 [58] Vare (2021)  
 [59] Trott et al. (2023: p.1564)  
 [60] Pickard et al. (2020); Elsen and Ord (2021); Feldman (2021)  
 [61] Martiskainen et al. (2020)

[62] Dunlop et al. (2021)  
 [63] Dillon et al. (2006)  
 [64] MacQuarrie et al. (2015)  
 [65] Woodland Trust (n.d.)  
 [66] Schuttler et al. (2018)  
 [67] Project Learning Tree (n.d.)

architecture. Educators endorse community and outdoor learning as essential for motivating behavioural shifts and systems thinking[68], while partnerships help to role-model the stakeholder collaboration that is essential for environmental policy progress towards addressing complex, multi-causal ecological challenges.

An example of effective practice in outdoor learning in England was the Children and Nature Programme, which was a collaboration between Natural England, the Department for Education (DfE) and Defra. Through the programme 53,000 children experienced more time in nature via community forest visits, residential trips and improvements to school grounds. Relatedly, care farms in the UK have increased the number of places that they offer each year to over 675,000 (a 54 percent increase)[69].

Barratt et al.[70] compiled a number of case-studies of early years education settings in England that have successfully engaged in education for sustainability. They identified sustained authentic outdoor play, the use of place-based learning, valuing the outdoors, fresh air, free play and risk-taking, and participatory-framed school curricula as key to education for sustainability in the early years. Scholars such as Vare and Scott[71] argue that ESD in schools should reach beyond individual behaviours towards strengthening societal discourse and decision making systems to better enable more sustainable structures and social norms to emerge across communities.

In recent years, there has been a growing focus on the links between environmental education and various aspects of student health, including well-being and mental health[72]. Time spent in natural environments through learning outdoors or conducting field work has been proven to have measurable benefits on mood, self-esteem

and levels of anxiety and stress in children[73]. Experiential environmental education enables sensory immersion and creativity as an antidote to excessive classroom or screen time, which can help to refresh young people's attention and cognition[74]. Discussion of eco-anxiety and overwhelming pessimism surrounding climate change is now being balanced with perspectives that seek to nurture young people's inner resilience, hope and strategies for emotional regulation when facing eco-grief[75]. One of the more successful strategies for helping young people to regulate their climate worry is 'meaning-focused' coping, that is, student-led projects that tackle some aspect of sustainability thereby dealing actively with the stressor[76].

A review of the current state of outdoor learning in Wales[77] noted that outdoor learning links strongly to the 'four purposes' of the new Welsh curriculum, in particular the educational purpose of developing 'healthy, confident individuals'. Prior research in Wales during the COVID-19 pandemic also highlighted the ways in which 'outdoor learning played an increased role, both in and out of school, in supporting physical and mental wellbeing' both during, between and directly subsequent to Covid-19 lockdowns[78].

Even as environmental education continues to emphasise sustainability competencies, educators increasingly recognise the need to nurture positive connections to nature and community as a foundation for collective action in the face of large-scale ecological threats[79]. Amidst warnings of health risks related to environmental decline, with disease outbreaks and food shortages being predicted in the coming decades, the positive benefit that school gardens, conservation activities and nature play can have on health and wellness, as well as social integration, will become ever more pertinent.



## 2d. Thinking globally

Environmental topics are inherently global in scope, with the human impact on our climate, oceans and biodiversity traversing borders. Cultivating ‘think global, act local’ perspectives, through exploring the interconnectedness of local lifestyles with ecological systems, is therefore considered crucial in environmental education[80]. As a response to the potential ‘psychic numbing’ to distant sustainability issues, immersive and affective learning activities[81], especially through recent developments in simulations and virtual reality technology, bring global issues closer to learners[82]. Enabling young people to be exposed to international case studies with cultural perspectives enriches their contextual understandings and can nurture the empathy that is essential for bringing about a globally conscious environmental citizenship[83]. Engaging in community-based projects (as explored above) then allows young people to experience local action.

Linked to both this theme and the theme below on justice, educators have responded to critiques that environmental education has tended to perpetuate Western epistemologies and needs to engage to a greater extent with globalisation and anticolonialism[84]. Niens and Reilly[85] found that when teachers in Northern Ireland engaged in critical global citizenship education from multiple perspectives, this greatly enhanced the ability of students aged 8-9 and 12-13 to understand and empathise with the different living conditions of people living in other parts of the world. However, they also

found that teachers lacked critical perspectives on the relationships between local issues and global North/South relationships. Pashby and Sund[86] carried out workshops with secondary school teachers in England, Finland and Sweden to explore the HEADSUP tool, which was first proposed by Andreotti[87] to help identify seven problematic patterns of representations and engagements commonly found in narratives presented in educational approaches to global issues. They found that the tool ‘demonstrated great possibility for critical reflection, community building, and application’ as well as demonstrating some ‘constraints and challenges’.

## 2e. Social dimensions including justice

Environmental challenges like pollution, climate impacts and food insecurity can disproportionately impact marginalised groups, making some environmental education a matter of social justice[88]. Learning to analyse the root causes of sustainability issues through economic, racial or colonial lenses can reveal uneven power dynamics that are driving resource extraction, emissions and environmental harms, while empowering students to design equitable solutions[89]. Environmental justice also requires looking beyond humans to consider more-than-humans[90]. Proponents of this approach to environmental education emphasise the need to move beyond individualistic framings of sustainability issues towards addressing collective community capacities, and rights and responsibilities central to solutions[91].

Trott et al.[92] conducted a systematic review of whether issues of justice are found in climate change education. They found 55 peer-reviewed articles with data from 57 countries published between 2007 and 2020. Notably, the ‘justice-driven CCE’ examples found ‘took place within and beyond STEM education settings’, and were ‘fuelled more by people-focused aims

- |                                  |                                  |   |
|----------------------------------|----------------------------------|---|
| [68] Mann et al. (2023)          | [77] French et al. (2023: p.20)  | [86] Pashby and Sund (2020)             |
| [69] Gilchrist (2023)            | [78] French et al. (2022)        | [87] Andreotti (2012: p.326)            |
| [70] Barratt et al. (2014)       | [79] Ojala (2016)                | [88] Agyeman et al. (2016)              |
| [71] Vare and Scott (2007)       | [80] Hadzigeorgiou et al. (2012) | [89] Jinnah et al. (2023)               |
| [72] Kuo et al. (2018)           | [81] Sobel (2019)                | [90] White et al. (2023)                |
| [73] Tillmann et al. (2018)      | [82] Petersen et al. (2020)      | [91] Dittmer et al. (2018)              |
| [74] Kuo et al. (2018)           | [83] Stapleton (2019)            | [92] Trott et al. (2023: p.1535-p.1555) |
| [74] Pihkala (2020)              | [84] Matthews (2011)             |   |
| [76] Wullenkord and Ojala (2023) | [85] Niens and Reilly (2012)     |   |

(e.g. advancing equity) compared to planet-focused aims (e.g. protecting the environment)’. They found few studies in formal primary and secondary school settings that ‘reported on how justice-focused CCE impacted students’. An exception, however, is the study by Tagg and Jafry[93] in Glasgow in Scotland which was an 18-month ‘Water for ALL’ project with 10-year-old students. The study found that the students gained a sense of ownership when exploring the disparities in clean water access that they experienced compared to children in Malawi and Zambia, culminating in a showcase for parents and guests where children presented a ‘climate justice tree’ that featured pledges written by the children as well as a ‘climate just’ wall with raindrops featuring their understanding of climate change, justice and a climate-just world.

Whether examining green space accessibility in lower-income areas or the global majority’s climate vulnerability despite minimal carbon footprints, activities foregrounding justice principles and movement-building tools motivate collective agency for transformative systems change[94]. Educators play a key role nurturing empathetic sustainability problem-solvers able to critically evaluate complex social dimensions across local and global ecological challenges. Ultimately, environmental education seeks to equip emerging generations with skills to champion policy changes and development pathways that preserve ecological integrity while upholding social equity.

## 2f. STEM connections

Linking environmental education and STEM subjects helps to cement ecological concepts[95]. Examples include comparing the absorptivity of different sorbents used for cleaning up an oil spill in water[96], or learning how the total solar irradiance hitting a photovoltaic (PV) panel can be increased through the use of a concentrating device, such

as a reflector or lens[97]. Growing food sustainably within the school grounds can help children experience life cycles, a core element of the primary curriculum[98] while hands-on experiments and designing biomimicry structures helps to ground scientific knowledge in resilient design principles that are inspired by nature[99]. As sustainability rapidly transforms technology needs and STEM career trajectories in renewable energy, sustainable architecture, environmental remediation and conservation science domains, exposure to these STEM skills builds pathways for emerging ‘green’ careers[100].

The National Association for Environmental Education commissioned reviews of ‘The Environmental Curriculum’ as reflected in the National Curriculum of England for early years and primary education[101] and Key Stages 3 and 4[102], including analysis of connections between environmental education and STEM subjects[103]. The Royal Meteorological Society has also carried out work to consider where climate change appears in the curriculum and how this can be enhanced in STEM subjects[104]. The Climate Ambassador Network at the University of Reading in partnership with STEM Learning UK[105] and the new Climate Advisors Network led by Ashden are also working to ‘give schools access to academic and industry expertise on Net Zero’[106]. A study by Kumar et al.[107] which deployed a playful learning tool called the ‘Heat-Cool Initiative’ with 103 students in years 5–6 and 7–9 in five UK primary and secondary schools found an increase in positive motivation and engagement as well as an increase in climate literacy.

[93] Tagg and Jafry (2018)

[94] Bowers (2001)

[95] National Science Teachers Association (2014)

[96] Science Buddies (n.d.)

[97] NEEF (n.d.)

[98] Sustain (n.d.)

[99] Gardner (2012)

[100] Diaconu et al. (2022)

[101] Green (2015)

[102] Green (2018)

[103] Green et al. (2019)

[104] RMetS (2023)

[105] STEM Learning (n.d.)

[106] Reay (2023: p.27)

[107] Kumar et al. (2023)



## 2g. Partnerships with environmental organisations

Collaborations with environmental charities, conservation agencies, outdoor learning centres and sustainability-focused businesses greatly augment delivery of impactful environmental education for schools through enhanced expertise, resources and local contexts[108]. Shared projects building nature trails, community gardens, wildlife habitats or waste solutions demonstrate cross-sectoral cooperation addressing complex ecological issues. Exposure to diverse environmental careers and activism inspires students' ecological citizenship. Accordingly, cultivated partnerships are considered crucial for scaling schools' sustainability performance[109].

A successful partnership that took place in London was the Green Spaces, Learning Places (GSLP) environmental education initiative which runs schools-based and community-based sessions to create opportunities for children and young people to engage with green outdoor environments[110]. GSLP's Schools Program engaged 42,000 students in schools across London over three years. Before and after surveys showed that the programmes had a 'positive influence on increasing participants' understanding, confidence, nature connection, wellbeing, and involvement in green outdoor environments'.

## 2h. Whole-school approaches

Whole-school approaches to sustainability, as supported through initiatives like Eco-Schools, integrate sustainability leadership, learning and decreasing the environmental impact of school operations[111]. Eco-school frameworks provide both guidance and recognition for environmental management, learning and engagement across school grounds, governance, community links and curriculum[112]. This holistic reorientation of mainstream education in schools is reflected in activities such as waste audits, biodiversity initiatives, school clean-ups and governors enacting greener campus policies[113]. Mainstreaming these habits supports broader shifts towards low-carbon, ethical communities. According to Keep Britain Tidy[114] 1.4 million pupils in England attended a school working on the Eco-Schools programme from 2022-2023.

Forest School programmes often use the natural assets of school grounds as natural classrooms. Drawing on experiential outdoor learning philosophies that took shape in Scandinavia in the 1950s, forest schools in the UK emerged amongst 'multiple demands to teach defined curricula and achieve targets for attainment while nurturing children's physical health and social well-being'[115]. A study that interviewed 20 forest school leaders in the UK found that the practitioners felt that benefits of this approach included developing children's interest and engagement with nature as well as their relationship with others and ability to take responsibility and assess risks, as well as meeting the needs of kinaesthetic and sensory learning styles.



- [108] Ballard et al. (2017)
- [109] Wheeler et al. (2018)
- [110] Garip et al. (2021: p.25)
- [111] Sharma et al. (2019)
- [112] Keep Britain Tidy (2013)
- [113] Mathie and Wals (2022)
- [114] Keep Britain Tidy (2023)
- [115] Harris (2017: p.272)

## 3. Case Studies

This section of the report includes four case studies of environmental and sustainability that have been selected to illustrate some of the key concepts outlined above, while representing educational programmes in England, Scotland and Wales that reflect a range of subjects, approaches and audiences.

### 3a. Eco-Capabilities in England

The Eco-Capabilities project explored arts-based research and educational interventions in natural settings with primary school pupils in England[116]. Integrating a number of the effective practices identified above – especially aspects of cross-curricular, outdoor, experiential learning – the project used Sen’s[117] capabilities framework to explore and support well-being and nature-connection in young people. Researchers from UCL worked with the arts and well-being charity Cambridge Curiosity and Imagination and two primary schools in deprived areas of East Anglia.

Over the course of eight ‘creative adventuring days’, researchers, teachers and the project partner led 120 children aged 7 to 10 years old through outdoor activities combined with arts exercises, for example drawing their ‘happy place’. These activities resulted in increasing visibility of nature by directing the attention of young people to nearby outdoor spaces, exploring the value of nature to people, and connecting experiences in nature with well-being[118]. This arts-in-nature practice was also found to increase confidence, self-esteem and environmental agency[119]. This process of ‘artscaping’ has been further explored in UCL’s Branching Out project, resulting in a guide for schools to create art-in-nature educational experiences[120].



In an IOE Policy Briefing, Walshe[121] recommended:

*All primary-age children should participate in one session of arts-in-nature activities per week to support their mental health and wellbeing, connect them with nature, and positively impact their broader engagement with learning in school. To achieve this, practice should be incorporated into initial teacher education for all primary teachers.*



- [116] UCL (n.d.)
- [117] Sen (1987)
- [118] Walshe et al. (2023)
- [119] Moula et al. (2023)
- [120] Cambridge Curiosity and Imagination and UCL (2023)
- [121] Walshe (2023)



# Scruffy Sammy



Researchers found that the students participating in You & CO2 developed a more positive attitude towards carbon footprint reduction[125]. Teachers who participated in the project reflected on its alignment with the new Welsh curriculum, including areas of learning and experience related to both the humanities and science[126]. This project is also relevant in the context of the Well-being of Future Generations Act[127].

## 3b. You & CO2 in Wales

The You & CO2 project in Wales illustrates a very different example of arts-based environmental education, utilising technology and interactive narratives to explore concepts related to climate change with students in Key Stage 3 (11 to 14 years-old)[122]. Researchers from Swansea University and Bournemouth University worked with two secondary schools in Wales to develop a series of workshops covering carbon footprints of everyday activities. Using the model of STEAM – in which STEM activities are combined with arts – students then participated in No World 4 Tomorrow, a web-based interactive digital narrative developed by the researchers. This storytelling exercise, set on a lunar colony, presented learners with a series of text prompts and they made decisions about food and travel based on considerations such as resource limitations and collective interests[123]. As a final stage of the project, students worked both individually and collaboratively to create their own interactive digital narratives.

Researchers identified the following ‘fight or flight’ narratives from students, with implications for further environmental engagement and empowerment of climate action[124]:

- Fight-Denial: deny climate change, often demonstrating a lack of understanding.
- Fight-Individual: modify personal choices and behaviours.
- Fight-State: urge government action without modifying personal choices.
- Fight-Holistic: modify personal choices and urge governmental action.
- Flight-Social: leave Earth through individual effort but as part of a group.
- Flight-State: leave Earth through a government programme.



[122] <https://youandco2.org/>

[123] Skains et al. (2022)

[124] Ross et al. (2021)

[125] Rudd et al. (2020)

[126] Ross et al. (2023)

[127] Senedd Cymru (2015)

### 3c. Polli:Nation in Scotland

Another aspect of environmental and sustainability education involves understanding biodiversity and participating in conservation. The Polli:Nation programme of Learning through Landscapes worked with over 250 primary and secondary schools across the UK on nature study and restoration on school grounds. Researchers at the University of Stirling were project partners in terms of evaluating outcomes related to citizen science. Through focus groups with participating pupils, they identified increases in understanding of pollinators and conservation action, as well as changes in attitudes towards insects, for example, young people shifting from fear of bees to curiosity[128].

In an ethnographic study of 12 Scottish schools participating in Polli:Nation, Ruck[129] identified three aspects of the programme that enhanced the experience for learners: close-up encounters with other species, working with external experts, and a degree of informality. The programme showed potential as an opportunity to move beyond traditional ideas of environmental stewardship, to more transformative, relational engagement with the more-than-human world[130].

In Scotland, programmes like Polli:Nation help deliver the Learning for Education action plan, which calls for whole-school approaches to sustainability in which all learners are provided with sustainability education[131]. The combination of nature study and restoration on school grounds facilitates both improvements in the sustainability of school operations and opportunities for outdoor and classroom-based environmental learning.



[128] Learning through Landscapes (2019)  
[129] Ruck (2022)

[130] Ruck and Mannion (2021)  
[131] Scottish Government (2023)



### 3d. Eco-Schools in Northern Ireland

Eco-Schools is a global programme that supports whole-school sustainability based on a model developed by the Foundation for Environmental Education in 1994 that now works with over 59,000 schools in 68 countries[132]. In the UK, the programme is administered in each nation by a different charity: Keep Britain Tidy, Keep Scotland Beautiful, Keep Wales Tidy, and Keep Northern Ireland Beautiful.

Northern Ireland played an important role in the history of Eco-Schools, as the first Green Flag in the world was awarded to Downpatrick Nursery School in 1994. By 2015, Northern Ireland reached another milestone, with all 1,152 schools actively participating in Eco-Schools, the first national operator of the programme to reach 100% of schools.

Another finding of the case study related to interviews with teachers that participated in an Eco-Schools training programme at Queen's University Belfast and then delivered a leadership programme to students, which was found to expand definitions of eco-leadership and empower students.

Participants then explored a wider definition of leadership, using an exercise to demonstrate that anyone can be a leader, and that leadership – particularly in the context of Eco-Schools – is about facilitating, enabling, and encouraging rather than control and command. When asked the same question, “Do you think of yourself as a leader?” at the end of the workshop, the majority of pupils now replied that they did[134].

In a case study prepared for the Global Environmental Education Partnership[133], Van Ry shared some of the measurable impacts of the programme:

- Energy ‘Power Down Days’ saved an average of 32.7kWh/school, which would save of £1.2 million per year if every school in Northern Ireland participated.
- Participation in the Wrigley Litter Less project saw a 45% reduction in pupil littering.
- Travel to school by sustainable transport rose by 21% during the Translink Travel Challenge.





It is worth bearing in mind that whilst this chapter focuses on collating UK case-studies, as Howard-Jones and Dillon[135] have noted, it may be necessary in transforming environmental education in the UK to learn ‘from initiatives evaluated by researchers elsewhere’. They note, for example, that studies in the US with children aged 10-12 have found that ‘developing and implementing “family action plans” to engage in—and promote— active climate change mitigation at the household level, and writing and delivering public speeches to local policy-makers and community members in a city council meeting’, have been found to be effective practices[136]. A study in Crete in which primary and secondary school children interviewed parents about energy usage also found this to be an effective approach in inspiring more careful energy use[137]. A similar study but relating to climate change was also found to benefit parental attitudes in North Carolina[138].

International examples of good practice in environmental, sustainability and climate education can also be found through resources such as the North American Association for Environmental Education’s Guidelines for Excellence series[139], case studies published by the Global Environmental Education Partnership[140] and Monitoring and Evaluating Climate Communication and Education project[141], and the stories of the winners of the UNESCO-Japan Prize on Education for Sustainable Development[142].



[135] Howard-Jones and Dillon (2022)  
[136] Trott (2019)  
[137] Zografakis et al. (2008)

[138] Lawson et al. (2019)  
[139] NAAEE (n.d.)  
[140] GEEP (n.d.)

[141] MECCE (n.d.)  
[142] UNESCO (n.d.)

# 4. Challenges in Environmental, Sustainability & Climate Education in the UK

The following chapter explores some of the main challenges in environmental, sustainability and climate change education today. As these challenges demonstrate, there are a number of barriers and obstacles that are impeding progress in delivering high quality environmental, sustainability and climate change education in the UK and globally.

Overall, it must be remembered that environmental, sustainability and climate change education, as Edsand and Broich<sup>[143]</sup> have argued, cannot be ‘considered a magic bullet’ for promoting environmental literacy. Their research in Colombia found that ‘socio-economic status, stronger student science abilities, parent characteristics, and a few school-level characteristics such as quality of education resources and school ownership (public versus private) seem to be decisive factors for varying levels of environmental literacy among students in Colombia’, rather than environmental education. In the UK too, there are systemic factors and structures that cannot be addressed by education alone.



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## 4a. Integrated versus stand-alone subject

Whilst section 2a outlined the arguments and evidence for taking a cross-curricular approach to environmental, sustainability and climate education, some have argued that in fact the right approach to this area of study is to maintain its position as a standalone subject. For example, EIAM<sup>[144]</sup> argues that there is ‘no empirical study ... that demonstrates successful implementation of the cross-curricular approach’. In a later piece, EIAM<sup>[145]</sup> further argues that ‘the majority of evidence suggests that the cross-curriculum approach for implementing ESD and [climate change] education does not work’ and that ‘[v]ery few countries actually implement this approach in their curricula’<sup>[146]</sup>. Kessler<sup>[147]</sup> analysed data from the 2016 International Civics and Citizenship survey, which was conducted across 22 countries, to argue that ‘conventional curricular and co-curricular EE/ESE/ESD opportunities do not uniformly contribute to raising youth concern for climate change across contexts’ but that ‘increasing civic knowledge and trust in both schools and international organisations’ does.

Even those who are in favour of a multidisciplinary approach to environmental, sustainability and climate education in theory point out that implementing interdisciplinarity is a challenge in practice<sup>[148]</sup>. Referencing a variety of studies<sup>[149]</sup>, Parry and Metzger<sup>[150]</sup> note that ‘the complexity of the interacting environmental, social and economic pillars of sustainability call for a coherent, multidisciplinary approach to learning that presents further challenges for educators with in-depth training in a single subject’. Drawing on a range of papers<sup>[151]</sup>, they

[143] Edsand and Broich (2020)  
[144] EIAM (2022)  
[145] EIAM (2023)  
[146] *ibid.*  
[147] Kessler (2021: p.21)

[148] Parry and Metzger (2023)  
[149] Dymont (2005); Gruenewald (2005)  
[150] Parry and Metzger (2023: p.9)  
[151] Borg et al. (2012); Taylor et al. (2019); Kang (2019)



also argue that '[t]he secondary curriculum is commonly partitioned into "disciplinary silos", making cross-disciplinary collaboration and lesson planning difficult'.

#### 4b. Testing and standards requirements

An oft-cited impediment to comprehensive environmental, sustainability and climate change education is the constraining effect of standardised testing and curriculum standards that prioritise core subjects[152]. With significant classroom time devoted to preparing students for high-stakes exams, interdisciplinary topics such as climate change become marginalised. A survey of 1,000 14 to 28-year-olds in England by the British Science Association with the University of Plymouth found that those surveyed felt that climate change education in secondary school is too focused on passing exams and doesn't equip them with the skills needed to tackle future impacts of the climate crisis[153]. Rigid adherence to prescribed content removes flexibility for place-based, solutions-oriented pedagogies that integrate systems thinking. Some have advocated for revised standards frameworks that address this issue[154].

#### 4c. Lack of teacher training

A lack of adequate teacher training remains a well-documented barrier limiting effective delivery of environmental and sustainability education across UK schools[155]. Teacher training has been critiqued for failing to prioritise these interdisciplinary topics, or to equip educators with suitable pedagogies for complex socio-ecological themes[156]. Professional development for teachers has also been criticised for focusing too narrowly on subject knowledge, leaving many teachers feeling underprepared to facilitate engaging environmental curricula[157]. Research has emphasised the urgent need to embed sustainability literacy across all initial teacher

education programmes alongside providing continuous opportunities to upskill throughout the teaching career pathway[158]. Without this investment, achieving comprehensive climate change education that integrates systems thinking, outdoor learning, social justice and more will remain constrained.

#### 4d. Funding and resources

Limited funding poses a barrier to implementing robust environmental, sustainability and climate education across UK schools. Budget pressures can force schools to de-prioritise sustainability initiatives[159]. A survey of 504 teachers of 7 to 11-year-olds in the UK conducted by Atomik Research for the Breteau Foundation education charity found that more than three quarters of teachers have spent their own money, at an average of £52 each or £13 million collectively, buying supplies to teach children about the environment[160]. Equitable access to outdoor learning spaces, digital platforms and specialist equipment remains a challenge, especially in disadvantaged areas[161]. It is vital that investment in teacher training and 'green' infrastructure is made so that high quality environmental, sustainability and climate education can be made available for as many students across the UK as possible.

#### 4e. Local versus global

Effective environmental and climate change education must navigate bridging students' immediate lived experiences with developing their understanding of planetary-scale phenomena. While place-based, experiential pedagogies grounded in the local community build personal relevance, overly parochial framings risk missing the systematic drivers of ecological degradation which transcends

[152] Dyment (2005); Gruenewald (2005)

[153] Bishop et al. (2023)

[154] Nusche et al. (2024: p.20)

[155] Summers et al. (2005); Glackin (2016)

[156] Cotton (2006)

[157] Ennes et al. (2021); Esa (2010)

[158] Eklund (2018); Favier et al. (2021)

[159] Chawla and Cushing (2007)

[160] Bawden (2023)

[161] Coleman (2021); Prince and Diggory (2023)



geographical boundaries[162]. Conversely, only focusing on globalised sustainability concepts such as deforestation or ocean acidification can feel abstract and disconnected from young people's everyday realities[163].

The challenge here lies in contextualising universal principles within tangible, solutions-oriented actions that learners can embrace at multiple scales. A critical place-conscious education that bridges the micro and the macro by analysing symbiotic relationships between communities and their wider environmental impacts, both negative and positive, should be the goal.

#### 4f. Traditional versus progressive pedagogy

Educators must navigate tensions between conventional instructional models that emphasise knowledge transmission and reform-oriented, transformative pedagogies that emphasise personal and social transformation through environmental education. While imparting foundational scientific concepts remains important, pedagogy in climate and sustainability education must go beyond this to develop systems thinking and action competence[164]. Conversely, overly radical, utopian approaches are currently disconnected from the realities of the standardised curricula which teachers are obligated to meet in their teaching[165]. Striking a balance that leverages established practices alongside inquiry-based, solutions-focused lessons that contextualise environmental issues in students' lived experiences is an ongoing challenge.

Connected to this challenge is the fact that the UK government for the past 14 years has had a 'business as usual' vision of education with economic growth at the heart of education policy[166]. As long as this remains the case, meaningful environmental education that empowers a just transition to a sustainable future will remain elusive.

#### 4g. Behaviour change

Whilst increasing knowledge is a prerequisite, environmental education faces challenges in translating awareness into tangible shifts in learners' daily habits and pro-environmental behaviours[167]. Some studies have found that environmental education carried out in classrooms has been found to improve student knowledge and awareness of local environmental issues but not influenced their environmental attitudes[168]. Rickinson et al. [169] state that there is 'a strong case for questioning the notion that nature experience automatically contributes to environmental awareness, commitment and action' and that 'there is still much to be learnt about how and why programmes work or not'. Numerous psychological barriers such as conflicting values, perceived inefficacy, and social norms inhibit individuals from acting on their cognitive understanding of sustainability issues[170]. Approaches that are solely centred on transmitting facts about ecological crises often fail to resonate emotionally or to instil self-efficacy for personal and collective change[171].

Researchers advocate designing environmental curricula that fosters an emotional connection through nature experiences, cultivating an awareness of ecological injustices, and applying solutions-oriented pedagogies that build agency alongside systems-level thinking[172]. Highlighting realistic action strategies within students' spheres of influence, from school grounds to communities, is considered vital for overcoming inertia[173].

[162] Karaarslan-Semiz (2022)

[163] Scannell and Gifford (2013)

[164] Salinas et al. (2023)

[165] Sniderman (2018)

[166] Dunlop and Rushton (2022)

[167] Kollmuss and Agyeman (2002)

[168] Rice et al. (2023)

[169] Rickinson et al. (2004) p.6 and p.8

[170] Graves and Roelich (2021);

Marcinkowski and Reid (2019)

[171] Heimlich and Ardoin (2008)

[172] Williamson and Thulin (2022)

[173] Schild (2016)

# 5. Recommendations

To enhance the quality and impact of environmental, sustainability and climate education in the UK, we propose the following recommendations for key stakeholders:

## **For Policy Makers in the four nations of the UK:**

- Develop comprehensive national strategies for environmental, sustainability and climate education that set clear targets, provide adequate funding, and cohere across all four nations of the UK.
- Focus on cross-curricular integration and experiential learning to support the inclusion of environmental, sustainability and climate education as a core component of national curricula.

## **For Senior Leadership Teams, Governors and Multi-Academy Trusts:**

- Prioritise teacher training and professional development in environmental, sustainability and climate education, ensuring that all educators have the knowledge, skills, and confidence to deliver high-quality learning experiences.
- Foster community partnerships with local environmental organisations, businesses, and institutions to enhance learning opportunities and resources for students.

## **For Teachers:**

- Engage in continuous professional development to stay informed about effective practices and innovations in environmental, sustainability and climate education.
- Utilise technology and media to create engaging, interactive learning experiences that connect students with global perspectives and real-world challenges.

## **For National and Local Environmental Organisations:**

- Foster partnerships with teachers, schools and multi-academy trusts to ensure that your resources and experiential learning opportunities are used most effectively to enhance and challenge learners' formal education.

## **For Learners:**

- Actively seek out and engage with diverse sources of information on the environment, the climate and sustainability, including scientific reports, news articles, and community initiatives
- Participate in extracurricular activities, clubs, or youth groups focused on environmental and sustainability issue to gain practical experience and develop leadership skills
- Connect with peers locally and globally to share ideas, experiences and effective practices for addressing environmental challenges in your communities

## **For Researchers:**

- Conduct rigorous evaluations and research to identify the most effective strategies and approaches for environmental, sustainability and climate education, with a focus on measuring long-term impact and behaviour change.
- Collaborate with educators, policymakers, and community partners to develop evidence-based curricula and resources that are culturally relevant, socially just, and scientifically accurate.

By working together across these different roles, we can create a more supportive and effective ecosystem for environmental, sustainability and climate education in the UK. This will require sustained investment, collaboration, and innovation, but the potential benefits – for our students, our communities, and our planet – are immeasurable.

## 6. Conclusion

This report has highlighted the critical importance of environmental, sustainability and climate education in equipping young people with the knowledge, skills, and values necessary to address the complex ecological challenges facing our planet. By reviewing effective practices and case studies from across the UK, we have identified key factors that contribute to high-quality educational experiences in this field.



Cross-curricular integration, experiential, action-oriented learning, community engagement and outdoor learning, global perspectives, social justice, STEM connections, partnerships, and whole-school approaches emerge as vital components of effective environmental, sustainability and climate education. The case studies presented in this report, spanning England, Wales, Scotland, and Northern Ireland demonstrate the transformative potential of these approaches in nurturing environmental literacy, agency, and stewardship among students.

However, the report also acknowledges the significant challenges that educators face in delivering environmental education, including tensions between integrated and standalone subject approaches, the constraints of testing and standards, a lack of adequate teacher training, limited funding and resources, and the need to bridge local and global perspectives while balancing traditional and progressive pedagogies.

To overcome these barriers and realise the full potential of environmental, sustainability and climate education, we must prioritise rigorous research to identify effective strategies, develop

innovative curricula and testing standards, invest in teacher training and resources, foster community partnerships, leverage technology and media, and advocate for policy changes that support this critical area of learning.

The recommendations put forward in this report provide a roadmap of effective practices for policymakers, educators, and other stakeholders to work together in strengthening environmental education across the UK. By implementing these recommendations and learning from the effective practices and case studies highlighted here, we can empower the next generation with the tools they need to play their part in building a more sustainable, just, and resilient future for all.

As we face the escalating impacts of climate change, biodiversity loss, and environmental degradation, the imperative to prioritise environmental, sustainability and climate education has never been greater. It is our collective responsibility to ensure that every young person in the UK has access to the high-quality, transformative learning experiences that will inspire them to become the environmental leaders and change-makers our world so urgently needs.



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# Appendix: Young People's Learning and the Environment – a Manifesto (NAEE 2022)

## Introduction

Welcome to the National Association for Environmental Education's 2022 Manifesto for young people's learning and the environment. Its purpose is to build on existing work in schools and colleges and further stimulate change in thinking and practice. Doing this means that young people can be even better prepared to meet the social and environmental challenges they will face through their lives, and be ready to contribute to solving them. The manifesto is aimed at school and college leaders and governors, teachers, pupils and students, and is relevant to policy makers, administrators, inspectors, teacher educators, and NGO education teams.

For over 50 years, NAEE has been supporting schools, colleges and teachers in their work to help young people learn about environmental and sustainability issues. We have recently been involved in helping the Department for Education think through its policy responses to the demands that were made during COP26 in 2021. These included calls for more and better education about climate change and the other environmental threats we face, such as the already serious and rapidly growing threats to biodiversity and habitats, as well as the need for more education about the impacts that these are having on people across the planet. The calls also made the point that a consideration of environmental issues must not be an add-on to what is currently taught but an integral part of what every subject sets out to do. The background to all this is explored in an appendix.

As COP26 began, a study by the Global Future thinktank in conjunction with the University of York, found that 78% of people in the UK reported some level of eco-anxiety. And it's not just young people who are concerned. Today, many more people are aware that the environment is under threat on a global scale than was the case when NAEE was founded in 1971.

The manifesto sets out 16 commitments that we think will help guide institutions to become more sustainable, and improve the education that pupils and students receive. We hope that you can sign up to these as an individual or an institution. Following these, we set out four principles which the Manifesto is based on and which we think are at the heart of what is important for schools and colleges to do in relation to young people's learning and the environment. Finally, we briefly expand on the 16 points in a section that explores the thinking behind the Manifesto.

A note on terminology. In this document, when we use the words *environment* and *environmental* we mean the full range of environmental, social and economic issues, including equity and justice, as are found in the full meaning of sustainability and used in the sustainable development goals.



## The Manifesto

### *As leaders we shall*

1. foreground an inclusive whole-institution approach to environmental issues, including those around equity and justice;
2. encourage a genuinely collaborative, participative approach to decision making and leadership, that puts the environment at the heart of what we do;
3. be especially mindful of what pupils and students learn through the hidden curriculum;
4. provide opportunities for appropriate staff professional development, so that all subjects can contribute to education about key environmental issues, and the whole school supports sustainability in practice.

### *As teachers we shall*

1. commit to working collaboratively with colleagues, and with pupils and students, periodically to audit what they currently experience so that all subject areas can make valuable contributions to learning about local, national and global environmental issues;
2. provide pupils and students with first-hand experience of investigating environmental issues both inside and outside the classroom, doing so at least once a year and building on this throughout their education;
3. encourage pupils and students to explore issues critically and creatively, and to challenge the views, values and ideas that are presented to them in ways that develop their capacity to contribute to society throughout their lives;
4. enable pupils and students to think across subjects about possible futures from a range of perspectives, with a key focus on equity and justice and on the rights of species to exist.

### *As learners we shall*

1. support and challenge the school in its work to become sustainable including running projects to help tackle issues in the local community;
2. be open-minded, critical and creative when encountering new ideas and recognise that values are important in making decisions for ourselves, our families and for society, and that values can change;
3. commit to learning collaboratively as well as individually;
4. understand that environmental issues can be complex and that not all problems have clear-cut solutions so it may be necessary to make decisions on the basis of incomplete evidence and to live with a degree of uncertainty.

### *As an organisation we shall*

1. encourage young people to consider environmental issues in their personal decisionmaking and employment choices;
2. work together with parents and carers to draw them into environmentally-focused activities;
3. become part of a community hub for issues related to the environment, providing opportunities for local organisations to think about their own actions and becoming a role model for how to become more sustainable;
4. partner with external organisations and individuals to enhance learning in relation to the environment (eg farms, local shops, NGOs, etc), and champion causes that promote sustainability and environmental education within the community

## Four Principles

There are a number of recurrent themes across these 16 commitments. These constitute a set of principles which are at the heart of what we think is important for schools and colleges to do in relation to young people's learning and the environment.

**Partnership** is present in every section and includes whole-school decision-making, teachers working together across subjects, pupil and students working together and being involved in curriculum-making, drawing parents and carers into school activities, and working with community organisations.

**Integrity** involves matching words with deeds, exploring issues from a range of perspectives, being clear about values, and honest and open in admitting uncertainty, and not settling for easy answers.

**Building Capacity** is present in every section and relates to the development of the school as a sustainable institution, teacher professional development and curriculum-building, pupil and student learning and skill development, the creation of community-based opportunities for development.

**Inclusiveness** is found in whole-school decision making, in taking global as well as local perspectives on issues, in having considerations of equity and justice at the core of thinking and practice, and in enabling all subjects to contribute.





## The Thinking behind the Manifesto

In this section we set out brief notes on the thinking behind the Manifesto. We have deliberately kept these short and they should be seen as indications rather than prescriptions. They might usefully be read alongside the documents produced by the National Governance Association which set out how governing boards can support and challenge senior leadership teams (<https://www.nga.org.uk/knowledge-centre/whole-school-environmental-sustainability/>).

Foreground an inclusive whole-institution approach to environmental issues, including those around equity and justice.

This includes setting out the institution's vision, mission, values, strategy and policies to integrate the principles of sustainable living across all subjects and core activities. It also means ensuring the budget allocates sufficient funding to support sustainability in the school's core functions, address environmental issues, and enable buildings and grounds to be used as active teaching resources that model good practice. Where poor environmental practice persists, this can provide a useful focus for action. The sustainable development goals can be used to show the range of issues that might be focused on, and equity and justice are crucial both within the school community and in the wider world as it is disadvantaged and marginalised groups that tend to suffer most from environmental disasters.

Encourage a genuinely collaborative, participative approach to decision making and leadership, that puts the environment at the heart of what we do.

Collaborative leadership involves respecting pupils' and students' views and concerns as well

as those of other staff members. Through consultation, roles and responsibilities are distributed among staff members and learners who all have a stake in how the institution develops. Communication and consultation are key to whole-institution approaches. Schools have a lot of experience of forums such as school councils, eco-clubs and the like, with teachers and governors often being involved. Enabling students to be part of governance is much less well developed in schools than it is, for example, in FE or HE, but everyone has much to gain from facilitating this.

Be especially mindful of what pupils and students learn through the hidden curriculum.

This includes the way that the school uses energy and other resources, its purchasing policies and the way in which it supports, rewards and challenges its staff and pupils and students. Any difference between what an institution says about itself and what it actually does can quickly expose how sincerely values are held. In turn this can affect the respect with which institutions are held by teachers, learners, parents and carers, and the community more generally. It is of course impossible for any organisation (or individual) always to do what ought to be done in every circumstance. Sometimes this is because the financial resource is insufficient or because there would be unwanted side effects. The shift to net-zero will throw up many such examples both in schools and colleges as well as more widely. Coming to understand this, and that sometimes trades-off will be necessary in making progress is an important part of leaning about environmental issues and their consequences. As such, each dilemma offers a learning opportunity. Clear and open communication and explanation is imperative if this is to happen.

Provide opportunities for appropriate staff professional development, so that all subjects can contribute to education about key environmental issues, and the whole school supports sustainability in practice.

Opportunities to enhance teaching about environmental concerns need to feature in continuing professional development [CPD] at all levels from early career teachers to senior leaders. It should include the (proposed) specific National Professional Qualification in environmental sustainability, which is relevant to those who wish to lead in this area, but its main focus should be developing the curriculum and pedagogical approaches that will help young people learn more about environmental issues and what we can all do about them.

Fundamentally, it is teachers and schools that are best placed to determine what their professional development needs are and how they can be best met. There are already a large number of local, national and international environmental organisations that produce resources and make CPD opportunities available, and the DfE plans to fund additional resource and training provision. Further, governing boards, business managers and non-teaching staff also need to build capacity in sustainable leadership, management and operations.

Commit to working collaboratively with colleagues, and with pupils and students, periodically to audit what they currently experience so that all subject areas can make valuable contributions to learning about local national and global environmental issues.

This includes not only those topics that are found within discrete subject areas, but the opportunities that there are for cross-subject collaboration. It will not only include analysing what is taught and learned, but also how this is done. Teaching about specific issues should

include (i) consideration of why it is important, (ii) its likely impacts and (iii) what can be done to address the issue. Looking at this from a whole-institution perspective, three points stand out: [i] student groups such as eco-councils and watch groups, and projects such as Eco-schools need to be seen as an integral part of what is being done rather than incidental additions; [ii] how the institution is managed in relation to energy, materials, waste, water, food, and transport can contribute to student learning as well as to overall sustainability; [iii] links with parents and community groups can provide valuable learning opportunities for all involved as well as contributing to community cohesion.

Provide pupils and students with first-hand experience of investigating environmental issues both inside and outside the classroom, doing so at least once a year and building year on year throughout their education.

In addition to the hugely important area of ecological field study, this includes giving pupils and students opportunities to investigate and seek to address issues that matter to the local community while acknowledging the limits to what young people and schools and colleges can do alone. Doing this once a year is obviously a bare minimum; ideally it will be much more frequent and will be seen as an integral and essential part of every learner's experience helping them develop an affinity with the natural world and develop key skills. Crucially, this is an opportunity for students to envision how something might be different in the future and to become an agent of that change. There can be considerable scope for using school and college grounds for these explorations if they are managed with this in mind and there are organisations that can help to do this. Local green space of various kinds can also afford opportunities, as can collaborations with local wildlife trusts and the like. It is useful to remember that there is now considerable

experience of young people learning outside on a regular basis; forest school practice is an obvious example with some providers making this the core of a child's educational experiences.

Encourage pupils and students to explore issues critically and creatively and to challenge the views, values and ideas that are presented to them in ways that develop their capacity to contribute to society throughout their lives.

This includes enabling pupils and students to recognise that honest disagreement about future choices is to be expected given that people and groups can have different values, priorities and desires. Many of the more significant environmental issues we face are inherently political as they involve decision-making about society's priorities and the allocation of scarce resources. Environmental educators have worked with young people on a wide range of such controversial issues over a long period. The DfE says that teaching about political issues, the different views people have, and the ways pupils can engage in our democratic society is an essential part of a broad and balanced curriculum: an important way in which schools support pupils and students to become active citizens who can form their own views, whilst having an understanding and respect for legitimate differences of opinion. The DfE issued guidance on schools legal duties on political impartiality in February 2022. In this it confirmed that although schools do not need to present the views of climate change deniers, when discussing climate-related socio-economic reform, normal duties on political impartiality apply. Schools are directed not to encourage pupils to join campaigning groups, or take part in protests, but they are not instructed to actively discourage this.

Enable pupils and students to think across subjects about possible futures from a range of perspectives, with a key focus on equity and justice and on the rights of species to exist.

This includes helping pupils and students to recognise that obvious solutions may not always be immediately possible because of technological limitations or economic constraints. Particular emphasis should be given to exploring values when learning about possible futures. Collaboration between teachers across subject disciplines becomes harder to realise the more specialist the curriculum becomes; thus it is more difficult in secondary schools than in primaries where an integration through themes and special projects has long been a feature. And yet, without such collaboration, pupils and students will be unable to gain insights into the issues we are faced with. A prime example of this is how to respond to the climate emergency where it is not just science and technology that matters (what we might do) but the social sciences, humanities and economics as well (how we might do it). Young people are being disadvantaged if they are left to try to do this integration themselves. The focus on equity and justice is crucial as it is disadvantaged and marginalised communities that both historically and currently tend to be those that suffer most when environmental disasters affect human populations. A focus on the rights of other species serves to remind us that it is the human tendency to focus on our own concerns while ignoring impacts on other species that has caused most of the environmental issues we face.



Support and challenge the school in its work to become sustainable including running projects to help tackle issues in the local community.

This includes exploring and critically analysing the local natural, social and built environment, including the school, to find opportunities for bringing about change. Working within the school council, the eco-club and projects such as Eco-schools are obvious places to begin but care should be taken to avoid excluding pupils who are not involved in such groups. The governing body should be seen as an ally in this. All institutions grapple with environmental issues around energy, waste and water, and social disadvantage and discrimination also often feature. The sustainable development goals can be used as a reference point to show the range of issues that might be focused on, and working with local organisations such as the wildlife trust and other NGOs may well be useful. Campaigns such as those to raise the quality of local green spaces and their accessibility to all could be useful ways of getting involved.

Be open-minded, critical and creative when encountering new ideas and recognise that values are important in making decisions for ourselves, our families and for society, and that values can change.

This means appreciating that societies and communities can develop positively through an open consideration of different perspectives where values and wants are set out. This implies that clear and frequent communication and discussion are necessary if we are to understand each other. Today we get our news, information and ideas from multiple sources and it's available 24 hours a day. All information invites us to accept it at face-value, but how do we know it is accurate? Being sceptical of information is a useful way of considering its value. This can include asking yourself whether something sounds or feels right; considering

whether the source of the data is usually reliable; seeking corroboration from other sources; and checking with other people. Being sceptical is sometimes dismissed as just being negative and distrustful, but in reality it's the basis of sound decision-making.

Commit to learning collaboratively as well as individually.

This includes understanding that taking part in activities provides opportunities to share ideas and experiences and helps us recognise ways in which we might bring about change, and that we can often achieve more by working together and supporting each other. In another sense, everyone (even those acknowledged as experts) and every organisation (including educational ones) has a lot to learn together as we shift towards a sustainable future. In a similar way, it is likely that there is much that we shall all need to unlearn. In addition, we are frequently invited to assume that all learning is not only done individually, but is held individually. After all, school and college examinations all involve the individual proving what they (alone) know and can reproduce in competition with everyone else. But in many things we do, knowledge and understanding is commonly held. This applies especially to groups of people involved in a common task whether a sports team or an environmental project.

Understand that environmental issues can be complex and that not all problems have clearcut solutions so it may be necessary to make decisions on the basis of incomplete evidence and to live with a degree of uncertainty.

This means trying to act in line with our values when faced with uncertainty, and being aware that we are all part of complex adaptive systems so that postponing decisions and not acting is also a decision. It can be frustrating at any age to be told that things are complex and therefore

(too) difficult for you. It's especially so when you are motivated to find out more and do something to help. Doing something may well be possible even if you cannot do everything. Not all environmental issues are difficult though and many can be resolved simply and cheaply, especially those in and around the home. Making a difference to the waste you produce and what you do with that waste is one example, and there are lots of organisations locally and nationally to help with practical suggestions and tools. Ideas and practices developed in schools can be taken home to make a difference there, and home and community expertise can be brought to schools

Encourage young people to consider environmental issues in their personal decision-making and employment choices.

This includes helping pupils and students see that these issues are becoming increasingly important factors that influence how we work and live together, and the life choices we make. Desirable though becoming more sustainable (as a society, community, and family) obviously now is, it is important to realise that other things matter as well and that such a social transition is likely to need to be achieved through small steps rather than great leaps; for example, turning off all your home heating in winter to cut your carbon footprint is not sensible, even though it would be effective. All educational institutions need to remember that their core business is helping young people learn, and to become more sustainable at the expense of important learning opportunities would be folly. As well as specific employment that obviously focuses on the environment, all jobs are now 'green jobs' for two reasons: firstly there is the wide range of employment legislation and regulation with a sustainability focus, and secondly, there's a need to be aware and knowledgeable and motivated to ease the shift to becoming sustainable. Just as they have a key

role in promoting literacy and numeracy, schools and colleges also need to be helping young people learn about environmental issues, and to become, as some term it, environmentally literate.

Work together with parents and carers to draw them into environmentally-focused activities.

This includes keeping them up to date with developments in the school and drawing extended families into school-community activities. It also recognises that parents, carers and the extended family can be a valuable resource for schools to draw on. Care needs to be taken, however, to ensure that parents and carers are genuine partners in this process and not just the recipients of perhaps unwelcome advice, guidance or instruction. Young people should certainly not be sent home to correct their family's bad environmental habits as not all family relationships are amenable to such interventions. Schools and colleges can promote environmentally-focused activities through what they do, and draw on this in their teaching by involving young people.

Become part of a community hub for issues related to the environment, providing opportunities for local organisations to think about their own actions and becoming a role model for how to become more sustainable.

This means understanding that the transition to a more sustainable future that we are all engaged in will benefit from a sharing of effort and activity, and that how things are done is often just as important as what is done. It will be an unusual institution that does not already have strong community relationships and this probably means that there is much experience and trust to build on. Uniquely, schools and colleges can bring young peoples' voices to the debate about our futures, and their energies to initiatives and actions. They can also bring skills

of data gathering and analysis which can enhance the value of what is experienced and achieved. In terms of being a role model for how to become more sustainable, schools and colleges can emphasise the importance of having values that are congruent with actions, and the importance of shared learning, and building on that learning.

Partner with external organisations and individuals to enhance learning in relation to the environment (eg farms, local shops, NGOs, etc), and champion causes that promote sustainability and environmental education within the community.

This means understanding that there is considerable expertise and experience to be found in the wider community and in other organisations, and that collaboration is likely to bring mutual support and reward. The need to address environmental issues offers an ideal opportunity to further develop school – community relationships and establish mutually-supportive projects and initiatives. This is because, as environmental issues know no boundaries, there is common ground to work on and the chance to support and learn from each other. Local organisations will include elected councils, large and small businesses, charities and other NGOs, and a wide range of community groups. Most institutions will have many such links already and this will mean that there are lots of experiences and trust to build on.

## Background to the Manifesto

Despite excellent examples of practice, the experience of schools and colleges that most young people say they have today is one that all too frequently downplays the existential threats that the world faces. These come from rapid climate change, the accelerating damage to species, habitats and ecosystems and, because of these, to the richness, diversity and integrity of the biosphere that all life on Earth needs in order to thrive. The reasons for this lack of focus are multifaceted and can differ between key stages and across subjects, with committed teachers often struggling in unsupportive contexts.

Young people are critical of how little relevant education most schools and colleges currently provide. Part of this criticism relates to how much time is currently devoted to preparing for tests and exams, and the loss of opportunity this means for exploring issues in depth and for experiential learning and skill-acquisition in the natural world. For their part, schools tend to be caught between their values-driven wish to provide holistic, beneficial and stimulating experiences and opportunities for all their pupils and students, and external demands to deliver a knowledge-rich curriculum to prepare for high stakes testing that is of limited validity in the wider world.

Many young people say that they want to learn more about climate change and the other environmental threats we face, and what we can do about them, and say that the learning opportunities currently provided to learn about these hugely important issues are insufficient to meet the needs of young people themselves, teachers or, indeed, society. There is increasingly awareness that the current school curriculum is not fit for purpose and NAEE has been supporting Teach the Future to help to get young people's voices heard by those politicians prepared to act.



Whilst it is true, as governments tend to say, that the curriculum does usually require some basic study of environmental issues (see these NAEE resources which show how climate and climate change are covered in the English national curriculum: <https://naee.org.uk/latest-report-from-naee/>), this tends to be limited, restricted to certain subjects, and taught in a piecemeal fashion. Further, research suggests that many teachers are not as confident in approaching these important issues as they'd like to be.

Although our concern about the effects we are having on the planet has a long history, and educational programmes focused on this began in the late 1960s, it is only since the 2015 Paris Agreement that school pupils and students have begun to publicly articulate how poorly they think they are being prepared for a future very different from what they now know; a future that will likely be more unpredictable, more chaotic and much less fair or just. Pupils and students know that the threat posed by the global heating that is driving climate change is serious, and they take it personally, as their generation will likely live with it into the 2080s and beyond. Moreover, many are driven to campaign not only because of their own circumstances but also because they see climate change as making the world even more unfair for those in the global South where people with the lowest carbon footprints are likely to suffer the most severe effects.

Young people don't just want to learn about the science of the issues, about how we know there is a problem, and about the scope for social and technological innovation. They want to be part of the solution to the problems, and they want their schools and colleges to help them prepare for that role. Some institutions already do this well through lessons, first-hand investigations and practical activities, and by taking sustainability seriously as an organisation.

Important and valuable though these are, young people also need such activities brought together into coherent experiences that inform, inspire, motivate and empower them; that allow them to think about and examine issues and solutions in ways that will help us all deal with the climate and environmental threats we face.

## **The National Association for Environmental Education**

NAEE is the UK's oldest educational charity supporting schools and teachers to help young people understand the inter-relationship between humans and the rest of nature, and the responsibilities that we have towards the planet. Ours is a long-standing and trusted voice and we are currently celebrating our 50th anniversary year. Uniquely, NAEE still produces a termly journal for practitioners. We work with likeminded organisations to promote real-world learning, innovative practice and sustainable school development. We publish blogs, articles, reviews, reports and position papers that are freely-available on our website – [naee.org.uk](https://naee.org.uk)

NAEE is an Incorporated Charitable Organisation [Charity No. 1166502] that is run by its members and volunteers who care passionately about environmental education. Our charitable object is to provide a public benefit by advancing environmental education within early years settings, primary and secondary schools, and institutions responsible for teacher education within the UK and elsewhere by:

1. facilitating curriculum development through the provision of resources, information and ideas for teachers,
2. providing financial support for pupils to visit outdoor education centres, and
3. collaborating with organisations that have related objectives.

NAEE's purpose is to promote all forms of environmental education, and to support all those involved in its delivery, so that together we can understand and act on the need to live more sustainably in order to protect the future of our planet. We believe that young people have a right to first-hand educational experiences in their local environment, because these are critical in helping people understand the importance of the biosphere to all life on the planet, as well as being a source of wellbeing and fulfilment, and a motivation towards sustainable living. The Association is committed to campaigning for a strong focus on environmental and sustainability issues across the school curriculum and supports the work of Teach the Future.

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