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SUSTAINABILITY AND CLIMATE CHANGE EDUCATION

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KEYWORDS: CLIMATE; CLIMATE CHANGE; CLIMATE ACTION; SUSTAINABILITY; CLIMATE JUSTICE; AGENCY; COMPETENCES; AUTHENTICITY.

LINKS TO THE CORE CONTENT FRAMEWORK

High Expectations (Standard 1): 1.6

How Pupils Learn (Standard 2): 2.1, 2.3

Subject and Curriculum (Standard 3): 3.1, 3.5

Classroom Practice (Standard 4): 4.1, 4.2

PART 1: EXPLORING SUSTAINABILITY AND CLIMATE CHANGE EDUCATION

It is said that teaching is a calling and many of us pursue the role because we want to make a difference to young people's lives. This chapter is unique in its framing of subject and pedagogical knowledge for trainee teachers in sustainability and climate change education. Climate change is the most pressing problem of our time and, as a trainee teacher, you are at the forefront of this debate. As a future educator, you can inform discussions and policy on changing the curriculum provision

in England to embed sustainability and climate change education as a golden thread across all subjects.

The existing knowledge in the area needs reframing to support you, as busy trainee teachers, and indeed also support busy teachers in England, to assist the building of professional learning in the area. Hence, this chapter aspires to provide historical context, linked to education in the area of the sustainability and climate change debate: how it has evolved over time and how you can be supported to build competences and capabilities to teach sustainability and climate change education in an authentic way that intersects all aspects of the English national curriculum.

REFLECTION

What is your positionality as a trainee teacher in the teaching of sustainability and climate change education?

What is meant by climate justice? How can climate justice be explored at local level to inform global change?

What does personal action mean to you? How can you build opportunities for your pupils to empower them to take personal action towards a sustainable life?

(Questions adapted from *Climate Education and Sustainability Framework* (Majid et al., 2022))

WHAT IS SUSTAINABILITY AND CLIMATE CHANGE EDUCATION?

Climate scientists have been warning of the climate emergency for decades. The comprehensive Intergovernmental Panel for Climate Change (IPCC) reports have brought the science of the climate emergency to the forefront and what actions must be taken to reduce our carbon emissions (IPCC, 2021). Therefore, the knowledge in the area is vast and trainee teachers need guidance and clear support frameworks to enable them to develop agency in teaching about climate change.

UNESCO's competences for sustainability and the Sustainable Development Goals (SDGs) provide a structured framework to support pupils to develop knowledge, skills and understanding for living sustainable lives (UNECE, 2012; UNESCO, 2017). The notion of 'being' a global citizen is at the heart of developing these skills. This chapter, therefore, will go deeper into the subject and pedagogical knowledge and skills required to nurture trainee teachers' agency for the teaching of climate education and sustainability in an authentic and sustained way. Providing authentic opportunities to develop this work both from the trainee teacher and pupil perspective

is essential in gaining lasting impact. Principles set out on ‘forms of authenticity’ by Barwell and Hauge (2021) will be drawn upon to facilitate understanding in fostering authenticity in the teaching of climate and sustainability.

WHY SUSTAINABILITY AND CLIMATE CHANGE EDUCATION IS IN THE NATIONAL CURRICULUM

Sustainability and climate change education does not feature explicitly within the primary national curriculum in England (DFE, 2013). Aspects are featured in the science and geography provision. In Key Stage 1, pupils learn about the weather, drawing upon the seasons and daily weather patterns. In science, they explore habitats, thus drawing upon the adaptation of plants and animals within their habitats. At Key Stage 2, in science, pupils learn about climate and habitats of plants and animals, and how environments can change. Additionally, in geography, pupils learn about climate zones. This level of work does not explicitly feature the principles of sustainability and climate change, and how to build habits for a sustainable future. Therefore, there is a push to thread through the principles driving sustainability and climate change education throughout the entire curriculum. This golden thread would aim to support pupils in developing their competences of *ways of thinking, ways of practising and ways of being* (Advance HE, 2021). In a recent survey (Majid, 2022), teachers shared their views on climate change and how they teach it in schools. When asked into which subjects teachers fit climate change, geography and science were the most common answers. A handful of teachers discussed a more holistic approach on developing this work through the framework of eco-schools and Forest School provision. However, these approaches are ones that schools invest into themselves and are not necessarily centrally funded to build knowledge, skills and understanding of sustainability and climate change education. Therefore, there is a gap, and this chapter aims to support trainee teachers to understand how sustainability and climate education principles can be threaded through all aspects of their curricular provision.

HOW HAS ‘KNOWLEDGE’ IN SUSTAINABILITY AND CLIMATE CHANGE EDUCATION DEVELOPED OVER TIME?

This chapter sets out to frame sustainability and climate change education within the parameters of the national curriculum for England. The chapter will share an insight into the historical context into this area and how trainee teachers can build their subject and pedagogical knowledge to teach this area authentically.

Sustainability and climate change education has not featured in official curricula in England, and therefore the subject and pedagogical knowledge and conceptual ideas

cannot be critiqued with a chronological lens. Key international milestones will be drawn upon to understand and frame sustainability and climate change education.

The United Nations first discussed the environment over 50 years ago at its 1972 summit entitled ‘Conference on the Environment’ (UN, 1973). This led to key principles being adapted by nations to address the environmental emergency. Teacher training was mentioned in this report in recommendation 96C (UN, 1973). Similarly, the Earth Summit, held in Rio in 1992, set out a plan on sustainable development, including training for teachers, entitled ‘Agenda 21’ (UN, 1992). However, 50 years on, the embedding of training for teachers and trainee teachers on environmental issues has not been achieved. Similarly, in the Paris Agreement, article 12 specifically shared the need for *climate change education, training* (UNFCCC, 2016). Significant mobilisation of ‘Education for Sustainable Development’ (ESD) principles was achieved during the decade (2005–14) of ESD (UNESCO, 2022). However, the impact was short-lived and in the most recent IPCC AR6 [III] Report (Mitigation of Climate Change) states that *Changing from a commercialised, individualised, entrepreneurial training model to an education cognizant of planetary health and human well-being can accelerate climate change awareness and action* (IPCC, 2022a). In the recent government strategy on sustainability and climate change, the government sets out their key vision to become *the world-leading education sector in sustainability and climate change by 2030, with an emphasis on ‘support for teachers’* (DFE, 2022). Therefore, introducing further curricular content in teacher training courses, specifically targeting the climate emergency and sustainability education, is a step in the right direction.

Structures used to develop sustainability and climate change education are not standardised and hence there is no clear way to monitor the effectiveness. UNESCO, through its work in the decade for sustainable development, has tried to establish frameworks such as the Millennium Developing Goals and the Sustainable Development Goals, and there are emerging curricula to support teachers and schools in developing climate change education.

SUSTAINABILITY AND CLIMATE CHANGE EDUCATION NOW

Sustainability and climate change education has gained much momentum over the past five years. The global pandemic, alongside the visible breakdown of our climate, has heightened the need to put decades’ worth of policy into action. Many definitions exist for ESD. There is no consensus and developing a standardised definition is problematic. Cultural, historical, socioeconomic and local differences must be taken into consideration when thinking about ESD. For this chapter, the definition adopted by the United Nations in their 1987 report, *Our Common Future*, will be used as a standardised understanding. The United Nations define ESD as:

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987).

Another vital aspect of sustainability and climate change education is how our consumption in the global West may be having a detrimental effect on the global South. This idea links directly to living more sustainably. Therefore, developing skills that support pupils to look at their consumer habits through fact-finding around – for example, how items of clothing such as jeans are made or the carbon footprint of their lunch-box items can support pupils’ critical thinking and questioning of where the products they are consuming come from. This level of work in schools also builds on the notion of consuming less and supporting local enterprises.

WHAT MIGHT KNOWLEDGE IN SUSTAINABILITY AND CLIMATE CHANGE EDUCATION LOOK LIKE IN THE FUTURE?

The knowledge constructs around sustainability and climate change education will continue to evolve and change. One vital component that would be welcomed by teachers is the clear introduction of sustainability and climate change education as a strand within the national curriculum. Trainee teachers should develop their subject knowledge in the area by using resources such as the IPCC reports to gather peer-reviewed knowledge in the field. UNESCO’s Office for Climate Education (OCE) provides excellent resources to support training for teaching. This is an underutilised resource and schools are encouraged to tap into this to support their knowledge, skills and understanding of sustainability and climate change principles – for example, a recent resource for teachers explaining the IPCC Special Report on *Climate Change and Land* is broken down in an accessible way for teachers. The facts from the report are broken down in an accessible format with summary statements, as well as classroom activities that teachers can tap into. This resource is one of many available on the OCE website (Connors et al., 2021).

PART 2: FOUNDATION KNOWLEDGE IN SUSTAINABILITY AND CLIMATE CHANGE EDUCATION

As sustainability and climate change education is not explicitly taught through the programmes of study of England’s national curriculum, this section will set out approaches to learning to support trainee teachers in developing key aspects of climate and sustainability education in their settings. Therefore, this section will start by sharing three core learning aims and outcomes for sustainability and climate change education. It will then go on to share pedagogical approaches that can be used to develop sustainability and climate change education. Up-to-date research

will be drawn upon, including a co-created Manifesto (BERA, 2021, Dunlop et al., 2022) to shape the thinking in this section.

Table 14.1 Proposed aims and learning outcomes for sustainability and climate change education (adapted from Thew et al., 2021; Majid et al., 2022)

Knowledge	Attitudes, values and behaviours	Competences and capabilities
<p>1. Understanding of the causes and consequences of climate change - having a global and local perspective (IPCC, 2021, 2022a, 2022b). Know and understand the term 'Anthropocene'.</p> <p>2. Linking climate change to sustainability education and creating a solution-based approach to developing this knowledge and skills.</p> <p>3. Have an emphasis on social and environmental justice - teaching the impact our actions can potentially have on the most marginalised in society.</p> <p>4. Building awareness of climate solutions through focused research on 'how' to affect change - e.g., insight into sustainable practices at a local, national and international level - 'act locally, think globally'.</p>	<p>1. Consider your positioning as a trainee teacher and future educator. How will your attitudes, values and behaviours towards sustainability and climate change education affect the way you engage learners?</p> <p>2. Consider ethical issues driving the climate debate - e.g., how the consumption habits of the Global North have an impact on the most marginalised populations (Thew et al., 2021).</p> <p>3. Develop an understanding of the Sustainable Development Goals (SDGs) and how this framework can support your attitude, values and behaviours and that of your pupils to teach 'approaches that cultivate knowledge and global citizenship, while preparing students for curious well-informed lives' (UNESCO, 2017).</p> <p>4. Use the BERA Manifesto - co-creating with young people, teachers and researchers to promote shared attitudes, values and behaviours in the teaching of sustainability and climate change education (BERA, 2021; Dunlop et al., 2022).</p>	<p>1. Engage with competences that will enable trainee teachers to <i>critically engage with new information as it emerges and to recognise and advocate against denialism and fatalism</i> (Thew et al., 2021).</p> <p>2. Engage with UNESCO's key competences that shape trainees' ways of thinking, ways of practising and ways of being for sustainability.</p> <p>Ways of thinking:</p> <ul style="list-style-type: none"> • Systems thinking competency. • Anticipatory competency (future thinking). • Critical thinking competency. <p>Ways of practising:</p> <ul style="list-style-type: none"> • Strategic competency. • Collaborative competency. • Integrated problem-solving competency. <p>Ways of being:</p> <ul style="list-style-type: none"> • Self-awareness competency. • Normative competency. <p>3. Support pupils in developing routes into climate action. This will support the development of resilience and well-being and reduce eco-anxiety. Draw upon the work of Walshe et al. (2022) to support the development of eco-capabilities through nature connectedness.</p>

The above aims and learning outcomes are shaped to support trainees in building their knowledge, attitudes, values, behaviours, competences and capabilities. These six areas will support trainees in understanding how to develop content to support their pupils in understanding the core principles of sustainability and climate change education. The pedagogical approaches will share concrete examples on how these aims and learning outcomes can support pupils' learning outcomes for sustainability and climate change education.

SYSTEMS THINKING

The notion of systems thinking and a systems approach is a core principle driving all aspects of sustainability. Therefore, understanding how to develop a system's thinking approach for all areas of sustainability and climate change education is vital for successful engagement and change.

Simply put, a system is a sum of its component parts where each part works within the system to achieve set objectives. A systems approach seeks to look at a problem as a whole system, seeing how different parts of the system interact and hence influence each other. Therefore, a systems approach is a powerful way to monitor and understand the causes and effects of our actions within a system. A systems approach requires individuals to identify parts of a system to understand their interconnected relationships. Systems thinking also requires anticipatory thinking, where individuals use the evidence gathered within a system to model how behaviours may change or respond to a modification. Therefore, a systems thinking approach is integral in shaping pupil understanding of the complex aspects of our climate emergency – e.g., schools can engage in a carbon literacy project first to understand how the school works as a system and then pupils can use this information to model ways of reducing the school's carbon emissions by looking at buying local produce for the school canteen or the reduction of food waste, etc. This would lead not only to an improvement and efficiency in the school's use of resources, but, more importantly, would collectively support the reduction of emissions locally and nationally. *A systems thinker positions themselves so they can see both the forest and the trees and keep one eye on each* (Richmond, 1994).

PEDAGOGICAL APPROACHES THAT CAN BE USED TO DEVELOP SUSTAINABILITY AND CLIMATE CHANGE EDUCATION

Table 14.2 Titles of sessions that trainee teachers could develop over time to support the development of sustainability and climate change education (Majid et al., 2022)

1. Teacher positionality	2. Climate justice	3. Climate action: personal and collective
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It is suggested that trainees use the outlined model in Table 14.2, adapted from Majid et al. (2022), to deliver sustainability and climate change education. It is worth noting that understanding one’s own positionality within this work is vital to build confidence and secure subject knowledge in teaching the complexities of sustainability and climate change education. The area of climate justice has a key part to play in this field as climate justice cuts across all aspects of life on a local, national and international level. Our histories are intertwined and hence, in a postcolonial world, the reshaping of reality must acknowledge the inequalities faced by many due to the legacy of colonial practices. Research shows that this is a particularly complex area of teaching due to the emotive and controversial nature of the discourse. Teachers are reticent to engage in such debate and thinking within the classroom so as not to come across as ‘preachy’ (Majid, 2022). Therefore, teachers need appropriate instructions and resources to teach this area well. Finally, climate action is put forward as a third and arguably most important component of pedagogy to support pupils to take action to live more sustainable lives. Each section from Table 14.2 will now be taken individually to provide context on how these complex ideas can be shaped and taught authentically to primary pupils.

TEACHER POSITIONALITY

Teacher identity is complex, and evolves and develops over time. The notion of positionality is valuable to understand what knowledge, understanding and lived experiences have been experienced to help shape a trainee teacher’s understanding of sustainability and climate change education. This starting point can then be used to start discussions with pupils on sustainability and climate education. There are many ways to build this approach – examples are shared in Table 14.3.

Table 14.3 Sharing activities linked to developing positionality in developing foundation knowledge in sustainability and climate change education

Activity	How this will support pedagogical insight	Examples of types of activities
Showing video footage	Videos are a great way to start conversations to engage pupils, and to assess their insight and understanding into the complexities of sustainability and climate change education.	David Attenborough’s <i>Witness Statement</i> . Newsreel from <i>Newsround</i> on recent climate breakdown news (UK temperatures on Tuesday, 19 July 2022). Sharing Dr Ella Gilbert’s videos, explain complex climate science in a way that can be easily understood.

Activity	How this will support pedagogical insight	Examples of types of activities
Understanding what 'Anthropocene' means, sharing the term and its etymology with pupils.	<p>Discuss the word 'Anthropocene' as an unofficial term used to describe the period of rapid change over the past 50 years that has resulted in significant changes to the earth's climate.</p> <p>Consider framing this carefully, as it is not an officially recognised term across the scientific world. Therefore, scientists are still debating it.</p>	<p>Share the etymology of Anthropocene: it originates from the Greek terms for human (<i>anthropo</i>) and new (<i>cene</i>) (Crutzen and Stoermer, 2000; Edwards, 2015; Ruddiman et al., 2015; Waters et al., 2014).</p> <p>As the debate continues regarding whether this era in the earth's history should be called the Anthropocene, it could be put out to a class to debate, using evidence they have gathered from a range of sources. As a teacher, you could play 'devil's advocate' in substantiating the claims or dismissing them.</p>
Using imagery to start conversations about sustainability and climate change education.	Use the 'climate stripes' to understand the change in global temperatures since the late 1800s.	Use the climate stripes (Hawkins, 2021).

CLIMATE JUSTICE

Climate justice is an integral component of foundational knowledge in understanding sustainability and climate change education. The intersectionality of climate justice and how our actions impact on others plays a key role in building knowledge and understanding of the complex domains of sustainability and climate change education. The understanding of climate justice reinforces the notions of a systems thinking approach to understanding the complexities of sustainability and climate change education.

Trainee teachers are encouraged to look up the Sustainable Development Goals (SDGs) set out by the United Nations (UN, 2015). There are 17 goals that intersect and provide a framework to empower each citizen of the world to come together to enable a more sustainable approach to living. The 17 goals are underpinned with 169 targets and 232 unique indicators. Trainees are encouraged to study the SDGs carefully and use the goals as a framework to develop conversations about sustainability and climate change education. Table 14.4 provides examples of building climate justice into your curriculum.

Table 14.4 Sharing activities linked to climate justice in developing foundation knowledge in sustainability and climate change education

Activity	How this will support pedagogical insight	Examples of types of activities
Introducing the SDGs	<p>This is a global framework to embed sustainability and climate change education. Therefore, understanding the 17 goals, the 169 targets and 232 indicators will build trainee teachers' foundational knowledge.</p> <p>Look at the SDGs as 17 key societal indicators that act like a system - how one interrelates to the other and links up as a system. Therefore, if we have a positive impact on one SDG, this can have a knock-on positive on another. However, if we have a negative impact on one SDG through our action, this can have a detrimental effect on others.</p>	<p>Trainee teachers are encouraged to make links with their local Development Education Centre. Details can be found at: Consortium of Development Education Centres (CoDEC).</p> <p>First, introduce the SDGs to students - this can be done via:</p> <ul style="list-style-type: none"> • Whole-class discussion, each table is given a couple of SDGs to look into and then share their research back to the class. • Develop a learning trail across the school grounds with the SDGs. Pupils walk the trail to start developing an understanding. The trail can act as a continuous learning resource outside class time for pupils to embed their understanding of the SDGs. • As a whole-school approach, choose the most relevant SDGs and link them with each year group. This way each year group will focus on one SDG and look at it, in depth, over an academic year.
Oxfam resources	Have a look at the comprehensive set of resources developed by Oxfam on climate justice and use these to develop pupil understanding.	Look up the comprehensive range of resources from Oxfam (2022) to develop a layered and progressive insight into climate justice issues across the globe.
Using imagery	Use imagery to debate and make sense of the complex issues around climate justice.	Use images from <i>The Guardian</i> to look at food consumption from around the world to debate distribution of resources, ethics and fairness of this (Menzel, 2013).

Activity	How this will support pedagogical insight	Examples of types of activities
Indigenous practices	Much can be gained from the knowledge and insight that indigenous people hold. At COP26, indigenous communities had a platform to inform conversations to find sustainable solutions to achieve the Paris Agreement. Therefore, understanding the voice of indigenous communities will support the shaping of knowledge and understanding of work on climate justice.	<p>Introduce the word ‘indigenous’ and get pupils to provide insight into what they think this means.</p> <p>Can they give examples of people they might know who identify as coming from indigenous communities?</p> <p>Why is the knowledge of indigenous communities important in tackling climate change and living more sustainably?</p> <p>Case study on a chosen indigenous tribe to provide greater depth in pupil understanding of the skills, knowledge and understanding that can be gained from the community.</p> <p>Have a focus on climate activists from indigenous communities such as Carlon Zackhras from the Marshall Islands.</p>

CLIMATE ACTION: PERSONAL AND COLLECTIVE

There is growing evidence that young people are experiencing ‘eco anxiety’ (Dunlop et al., 2022; Whitehouse and Jones, 2021), where they share a concern for the planet and yet feel quite at odds in what actions they can take to support a more sustainable future. In a recent study, Majid (2022), the data suggest that pupils did share anxiety around the climate breakdown but positively did go on to list ways that they can take actions to build more sustainable lives. Actions such as planting more trees, walking more rather than driving to places and having more meat-free meals were some examples shared. Therefore, it is integral to build concrete ways to support pupils to take action to build more sustainable lives. This will not only support the building of sustainable habits, but also supports pupils in engaging in solutions and direct actions to combat the climate emergency. One way to facilitate this is engaging pupils with nature to develop sets of skills that build resilience, nature connectedness and support pupil well-being. The recent work on eco-capabilities, developed by Walshe et al. (2022), supports the notion of using nature and the arts to build ‘eco-capabilities’ that engage pupils in becoming more resilient while taking action to build a more sustainable future.

Table 14.5 Sharing activities linked to climate action that can be taken at a local level to develop foundational knowledge in sustainability and climate change education

Activity	How this will support pedagogical insight	Examples of types of activities
Using the school outdoor space	Using the outdoor space as nature trails, linking this to any aspects of the learning set out by the national curriculum to support the building of 'green skills'.	<ul style="list-style-type: none"> • Developing an eco-trail around the school to support science work on biodiversity. • Rewild parts of the school estate to support the reintroduction of wildlife. Watch the growth and the repopulation of the area over time. The data collected could be used in mathematics and science lessons.
Using the school outdoor space	Growing one's own food - using the seed to crop is the concept to facilitate learning in all aspects of the national curriculum.	<ul style="list-style-type: none"> • Monitor the growth of seeds for science. • Look at the crop yield by using different types of organic fertilisers - different approaches to growing - e.g., no dig method.
Carbon literacy projects	Utilising data from the school site to support the school to become net zero. This approach supports pupils in developing skills they can transfer to their everyday lives and future sustainable practices.	<ul style="list-style-type: none"> • Facilitate this through a structured programme such as the Green Schools Project (greenschoolsproject.org.uk)
Getting involved in charity work	Engaging with global issues through charity work. This will elevate the work from a local level to national and international action.	<ul style="list-style-type: none"> • Pupils could get involved in rewilding local spaces through involvement with local ecological groups. • Pupils could fundraise to plant trees internationally or help clean up oceans.

My final thought in this section is to engage your pupils and get them involved to support you in co-constructing curriculum outcomes. Emerging evidence in sustainability and climate change work demonstrates that engaging the younger generation is vital to develop approaches that will have a long-term impact. I would therefore ask that you read Dunlop et al.'s (2022) Manifesto sharing how the pupils can be supported to engage in environmental issues and support the development of curricular content. Although this Manifesto was constructed with secondary pupils, the principles are relevant for all age groups.

PART 3: UNDERSTANDING THE DEVELOPMENT OF CHILDREN'S KNOWLEDGE IN SUSTAINABILITY AND CLIMATE CHANGE EDUCATION

Sustainability and climate education are emerging areas for primary schools and, as such, there are no statutory guidelines in the progression of knowledge and skills across the primary age range. However, as demonstrated in Table 14.1, broad scaffolded structures can be deployed to support the development of knowledge, attitudes, values, behaviours, competences and capabilities. It is advised that trainee teachers draw upon the Programme of Study in each subject area they wish to embed sustainability and climate education, and see how the progression of skills can be achieved. The example in Table 14.6 illustrates how the area of nature connectedness can be explored across the primary age range.

Table 14.6 Illustrating how a sequence of lessons can be developed on nature connectedness

Year group	Learning outcomes	Activities to develop the skills and understanding	Next steps
Year R	Building nature connectedness through using the outdoor space for learning outcomes.	Nature trails - walks outdoors and connecting with the natural space. Using the materials collected to build display and create artwork.	This approach could be used to build collaborative artwork - e.g., a class nature collage.
Year 1	Building nature connectedness through using the outdoor space for learning outcomes.	Building science knowledge of common plants during outdoor learning opportunities. To be developed throughout the year to compare and link with seasonal change.	Using the senses to explore feelings - what can you see, hear, smell, feel in the outdoor space.
Year 2	Building nature connectedness through using the outdoor space for learning outcomes.	Develop work on habitats, understanding key aspects of habitats and how animals and plants co-exist. How we impact on habitats and what we can do to reduce this impact.	Use the local detail around habitats and explore broader habitats such as the oceans - how marine life is impacted from climate change and what we can do to build awareness.

PART 4: DEVELOPING YOUR KNOWLEDGE OF SUSTAINABILITY AND CLIMATE CHANGE EDUCATION FURTHER

SOME READING TO SUPPORT YOUR DEVELOPMENT

Gilio-Whitaker, D (2019) *As Long as Grass Grows: The Indigenous Fight for Environmental Justice, from Colonization to Standing Rock*. Boston, MA: Beacon Press.

If you wish to develop a deep insight into indigenous knowledge and work being developed to support the work on social and climate justice, this is a good read.

Lack, B (2020) *The Children of the Anthropocene: Stories from the Young People at the Heart of the Climate Crisis*. London: Penguin.

This book provides a contemporary lens from climate activists across the world on their vision for a better future.

OPEN ONLINE COURSES

Communicating Climate Change for Effective Climate Action. University of Glasgow: www.futurelearn.com/courses/communicating-climate-change-raising-engagement-for-climate-action

This site gives you details of all online courses available on climate change: www.my-mooc.com/en/categorie/climate-change?search%5Blocale%5D%5B0%5D=en

The UNE Learn platform on climate change has a range of courses you could take to further your knowledge and understanding: <https://unccelearn.org/>

WEBSITES RECOMMENDATIONS

Earth Warriors is a site that supports teachers with developing climate and sustainability education using the outdoor space. There is a cost involved in using their resource, but it is worth a mention here: www.earthwarriorsglobal.com/

The Green Schools Project is an excellent organisation supporting schools in developing carbon literacy. You can certainly get their support to build carbon literacy skills with your pupils: www.greenschoolsproject.org.uk/

UNESCO's Office for Climate Education: this is an excellent site with a range of free, accessible resources for teachers: www.oce.global/en/resources/ipcc-summaries-teachers

United Nations site for climate change: <https://unfccc.int/>

University of Reading's Partnering for the Planet site has a range of resources for both primary and secondary teachers to support the development of sustainability and climate change education: www.reading.ac.uk/planet/

SPECIALIST ORGANISATIONS

Eden Project Change Makers CPD: there is a cost involved with this. Details can be found at: www.edenproject.com/learn/schools/teacher-training-and-school-development/eden-project-changemakers-cpd

OTHER HELPFUL NATIONAL RESOURCES

UCL Centre for Climate Change and Sustainability Education. I would encourage you to join the mailing list for this centre: www.ucl.ac.uk/ioe/departments-and-centres/centres/ucl-centre-climate-change-and-sustainability-education

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