

# Foundations for an Eco Curriculum

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## Introduction

During the Covid 19 pandemic, the education system shifted from one predominantly based in schools to one where students were at home with a heightened focus on digitally mediated learning. Many students spent prolonged periods sitting in front of screens with information delivered to them. The pandemic could have been an opportunity for governments to pause traditional forms of learning and instead temporarily repurpose education to engage young people with their local environments, creating positive change and learning experiences in nature, supported by local communities. The pandemic instead highlighted the rigid framework of schooling and a fixation with standardised assessment and delivery of knowledge.

In some places, students formed alternative learning networks with their peers, local communities found alternative ways to support learning and public spaces became additional learning environments. These stories highlight the potential of learning as experiential, embroidered and co-created.

In 2019, millions of young people came together as part of the Youth Climate Strikes.<sup>1</sup> News of a young Swedish climate activist called Greta Thunberg spread round the world as she challenged world leaders to take immediate action in response to the climate and ecological emergency. In the UK, the UK Student Climate Network, organised more than 850 student-led events in 2019, drawing attention to the need for education reform to "teach young people about the urgency, severity and scientific basis of the climate crisis".<sup>2</sup> A recent survey by Teach the Future showed that "only four percent of students feel they know a lot about climate change, with almost seven in 10 respondents saying they would like to learn more about the environment."<sup>3</sup>

We live in a new geological epoch, the Anthropocene or the age of humans.<sup>4</sup> There are now more mini Lego figures than people on earth.<sup>5</sup> 60% of all land mammals are livestock, mostly cattle and pigs, 36% are human and just 4% are wild animals.<sup>6</sup> Humans are the dominant force on earth. The broad educational system and more specifically the curriculum enacted in schools is not fit for purpose in the Anthropocene. We must act with the appropriate urgency and move to a zero carbon world with a regenerative society where living creates the conditions for life.<sup>7</sup>

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<sup>1</sup> <https://www.nature.com/articles/d41586-019-02696-0>

<sup>2</sup> <https://ukscn.org/our-demands/>

<sup>3</sup> <https://theecologist.org/2020/feb/05/rethinking-environmental-education>

<sup>4</sup> <https://www.nature.com/articles/nature14258>

<sup>5</sup> <https://twitter.com/ProfMarkMaslin/status/1310131348473106432>

<sup>6</sup> <https://www.theguardian.com/environment/2018/may/21/human-race-just-001-of-all-life-but-has-destroyed-over-80-of-wild-mammals-study>

<sup>7</sup> <http://regenerativesociety.org/defining-regenerative/>

# The Climate and Ecological Emergency

**The science is clear**

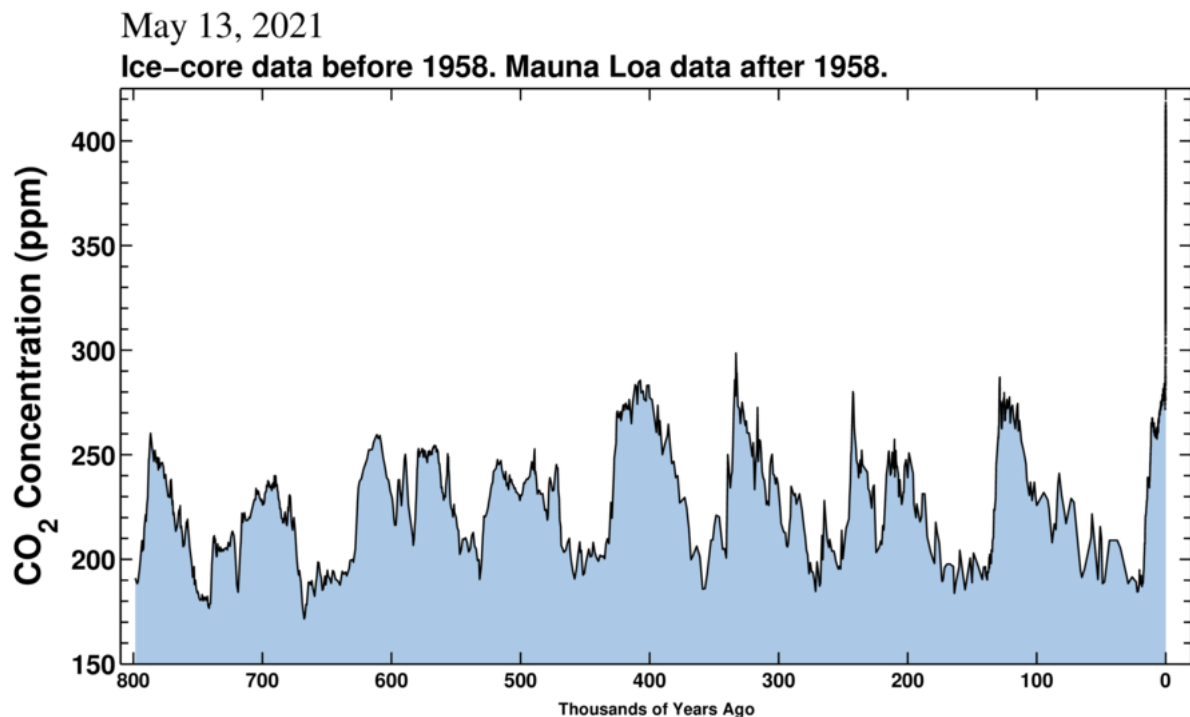
**We are facing an unprecedented global emergency**

**We must act now**

The opening sentences of Dr Emily Grossman's peer reviewed guide, 'Emergency on Planet Earth'<sup>8</sup> unequivocally communicates the state of the world and the urgency in which we must respond.

The science is clear: the world is heating and the breakdown of our environment has begun. Even now, warmer temperatures are wreaking havoc, causing an increase in extreme weather, floods, storms and droughts - along with rising sea levels, heat stress in our oceans and degradation of our soils. Extreme weather events are having devastating impacts on agriculture and destroying homes, costing taxpayers billions of dollars and leaving millions of people in need of humanitarian aid.

Human activity has caused atmospheric carbon dioxide concentrations to rise from a pre industrial level of 290ppm to 420ppm. Over the last 160 years, global average sea surface temperatures have risen by 1.1°C. Since 1900, global average sea level has risen by more than 200mm.



The Keeling Curve showing CO<sub>2</sub> concentration over the past 800,000 years<sup>9</sup>

Around the world, biodiversity is being annihilated at a terrifying rate. Population sizes of thousands of species of mammals, birds, fish and reptiles have fallen by 60% since the 1970s. We are losing our crop-pollinating insects and soil-rejuvenating earthworms. Species are going extinct 100 to 1,000 times faster than they would be doing naturally. Many scientists say we are now entering the Earth's

<sup>8</sup>

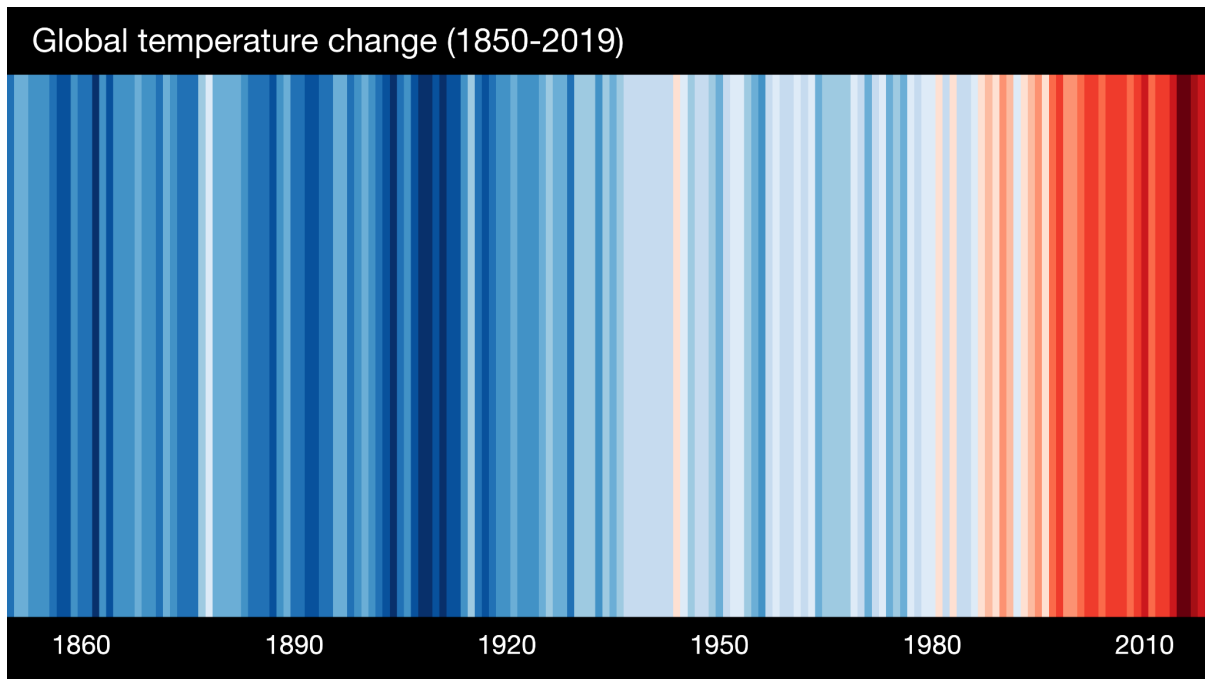
<https://docs.google.com/document/d/1QdWn7PCDqNUQvzmPaJPMEYqsXKAVcuE0MPxcJVdaKjw/edit?usp=sharing>

<sup>9</sup> <https://keelingcurve.ucsd.edu/>

Sixth Mass Extinction event, with one million species threatened with extinction - many within decades.

In November 2019, a group of more than 13,000 scientists from 153 countries declared “clearly and unequivocally that the Earth is facing a climate emergency” and that without deep and lasting changes, the world’s people face "untold human suffering".<sup>10</sup>

Ed Hawkins’ ‘Warming Stripes’ provides a graphical representation of the rapid rate of change in global temperature experienced over the past 160 years.



Warming Stripes for GLOBE from 1850-2019<sup>11</sup>

<sup>10</sup> <https://scientistswarning.forestry.oregonstate.edu/>

<sup>11</sup> <https://showyourstripes.info/>

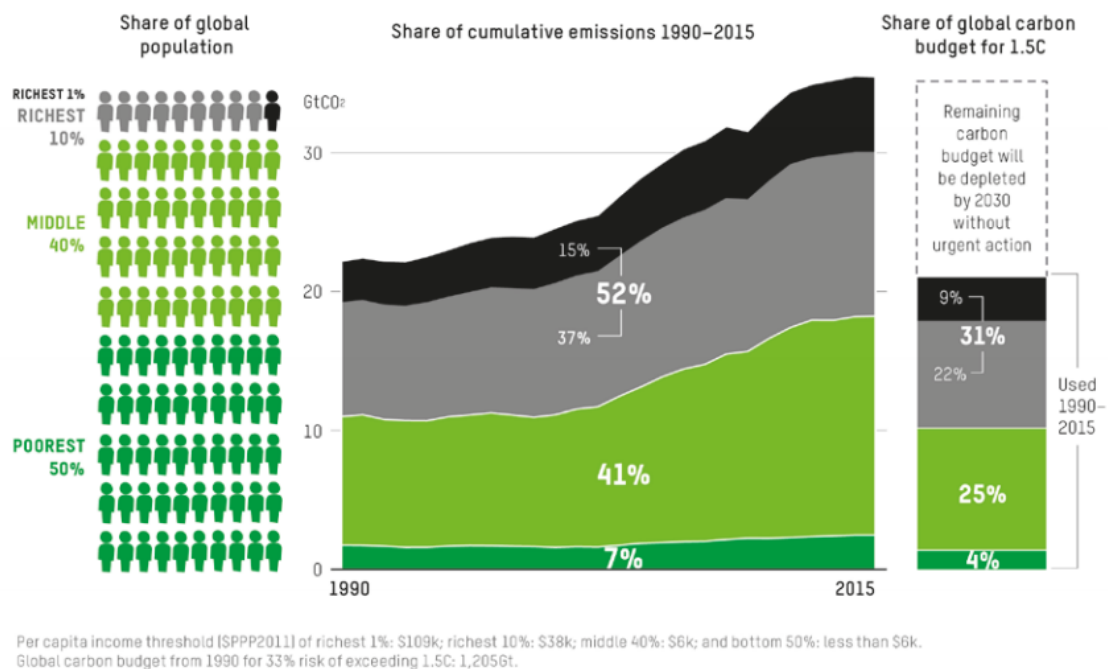
# Climate Justice is Social Justice

We are increasingly recognising that any efforts to tackle the climate and ecological emergency must also respond to the structural inequalities inherent in society. Any eco school curriculum must explore ideas of social structures and processes as much as they do the natural environment as well as exploring the intersection of ideas such as gender, race and inequality. From a young age, children are aware of injustice and can apply ideas of fairness to people and the environment.

Many of these ideas come together in the concept of climate justice.<sup>12</sup> The following are key aspects of climate justice:

- 1) Climate justice begins with recognising key groups are differently affected by climate change.
- 2) Climate impacts can exacerbate inequitable social conditions.
- 3) Momentum is building for climate justice solutions.

Oxfam recently released a report which identified the dramatic inequality in global carbon dioxide emissions. Most notably it communicated how more than 50% of global carbon emissions are produced by only 10% of the richest people in the world. Even more dramatically, annual emissions grew by 60% between 1990 and 2015. The richest 5% were responsible for over a third of this growth. The total increase in emissions of the richest 1% was three times more than that of the poorest 50%.<sup>13</sup>



Share of cumulative emissions from 1990 to 2015 and use of the global carbon budget for 1.5C linked to consumption by different global income groups<sup>14</sup>

<sup>12</sup> <https://yaleclimateconnections.org/2020/07/what-is-climate-justice/>

<sup>13</sup> <https://www.oxfam.org/en/press-releases/carbon-emissions-richest-1-percent-more-double-emissions-poorest-half-humanity>

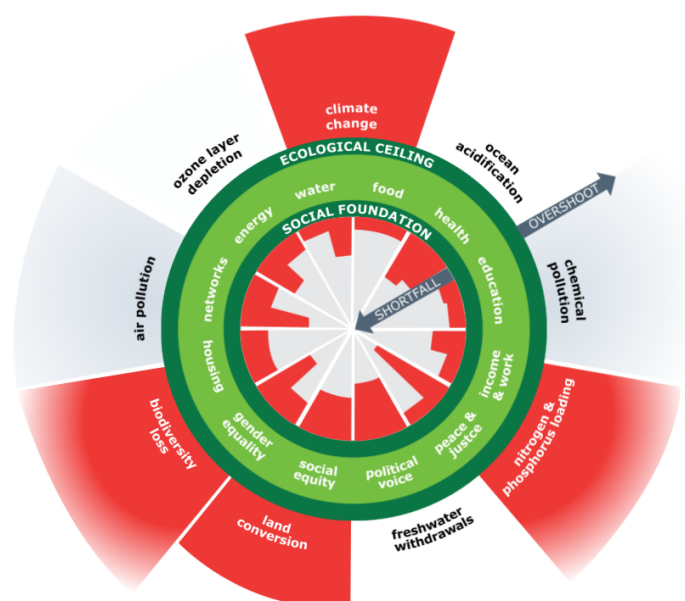
<sup>14</sup> <https://oxfamlibrary.openrepository.com/bitstream/handle/10546/621052/mb-confronting-carbon-inequality-210920-en.pdf>

# What is Nature?

A curriculum that labels itself eco-education and seeks to place nature at the heart of education should be clear on how it understands nature and ecology. The world consists of a multitude of things: human and other animals; other living things; and the habitats that these live in. Human animals have powers of language and technology that enable them to modify their habitats but there is nothing unnatural about the cities many of them live in or the technologies they develop. Nature refers to all living things and their habitats however modified by human activity. Ecology is the study of living things in relation to their habitat or environment.

The discrete things that comprise nature get their powers to act, their meaning and identity, from their relations to other things. Rather than view the world as a collection of things it is preferable to encourage children to see it as a collection of relations between things. Relations make people, other living things, and environments what they are and enable them to function. Nature is structured in ways that sustain all life as materials, energy and information flow between things. Biogeochemical cycles sustain life and place planetary boundaries on the development of human society. For example carbon and nitrogen can only be recycled at a certain rate and if too much is released into the atmosphere or soils, dangerous consequences result. Living sustainably means living within planetary boundaries.

Kate Raworth's 'Doughnut Economics'<sup>15</sup> communicates the relationship between humans and our bio-physical limits. Humanity's 21st century challenge is to meet the needs of all within the means of the planet. In other words, to ensure that no one falls short on life's essentials (from food and housing to healthcare and political voice), while ensuring that collectively we do not overshoot our pressure on Earth's life-supporting systems, on which we fundamentally depend – such as a stable climate, fertile soils, and a protective ozone layer. The Doughnut of social and planetary boundaries is a playfully serious approach to framing that challenge, and it acts as a compass for human progress this century.



<sup>15</sup> <https://www.kateraworth.com/doughnut/>

For most of human history people regarded themselves as part of nature and generally adopted an ethic of care for the rest of the living world. With the rise of modern science and technology, nature was placed in a separate realm from society and a host of dualisms entered language and thought (people/environment; subject/object; urban/rural; nature/society, etc). These shaped the design and delivery of the school curriculum where nature and society provided the content of different school subjects and dualism was fostered at the primary level by such everyday practices as the nature table, the nature walk, and such 'progressive' ideas as those that proposed children should be educated according to nature.

Modern society also removed people from everyday contact with plants, animals and the countryside as the economy was industrialised and habitats were urbanised. Such distancing (or alienation) from the less modified elements of nature was accompanied by a rise in the importance of the scientific and economic values of nature (as a source of profit making) at the expense of its ecological, aesthetic, spiritual, and existence values. Best practice in primary environmental education seeks to help children recognise these values and consider what should be the optimal balance between them.

Today the downsides of modern dualism are increasingly recognised. The rise of information and biotechnology is creating a world of hybrids, eroding dualism, and leading to a new understanding of both naturalism and humanism in a post-natural, post-humanist and post-modern world. The modern development paradigm focussed on growth needs to be replaced by a sustainable development paradigm focussed on sufficiency with primary education laying the following five foundations of a changed way of viewing nature and human progress.

Firstly, children should recognise that there is a real world of bio-physical structures and processes of which they and society are a part. This world imposes boundaries on society's development and to develop sustainably it needs to respect these boundaries. This requires changed forms of economy, politics and culture based on an ethic of care for all life (see the Earth Charter).

Secondly, children should be encouraged to see the natural in the social and the social in the natural: to see the world holistically with everything related to everything else. Things (a river, tree, elephant, town, school, person) are what they are and have agency by virtue of their relations to other things. Seeing the world primarily in terms of relations rather than things is at the heart of post-natural science, the new ecology, and contemporary nature writing.

Thirdly, children should develop ecological literacy. Ecology studies the relations between things in ecosystems (living things and their habitats). Amazonia and the school pond are ecosystems but so too is the city of Manchester. Ecosystems are more or less influenced by human activity but human influence is a factor in those often portrayed as 'natural', 'wild' or 'pristine'. Outdoor education is key to ecological literacy and eroding the distancing from the less modified elements of nature that urban and 'screen based' lifestyles encourage.

Fourthly, children should recognise that 'nature' is given meaning in media of all kinds. To assert that something is 'natural' is to place it outside society and beyond social influence: an ideological device used by advertisers, politicians and others.

Lastly, children should understand how society ascribes economic, scientific, ecological, aesthetic, spiritual and existence values to nature and that these are often placed in conflict by social development. Sustainable development rests on an ethic of care for all life and requires a global

democracy with global citizens who exercise responsibility for others, including others distant in space and time and other species. Sustainability citizenship should be cultivated from an early age.

# Nature Connectedness

Numerous reports highlight the trends in young people's relationship with nature.

- 75% of children spend less time outside than prison inmates<sup>16</sup>
- 90% reduction in the area that children explore and play in during their leisure time over the past 20 years<sup>17</sup>
- One in five children don't play outside on an average day at all<sup>18</sup>
- Four out of five children in the UK were not adequately connected to nature<sup>19</sup>
- Less than one in 10 children regularly played in wild spaces, compared to half of children a generation ago<sup>20</sup>

There is also considerable research to support the benefits of time spent in nature.

- 79% of children felt more confident in themselves having spent time participating in outdoor activities.<sup>21</sup>
- Spending more time outdoors in both childhood and adolescence was associated with less myopia in young adulthood.<sup>22</sup>
- 83% of children agree being in nature makes them very happy<sup>23</sup>

Nature connectedness captures that relationship between people and the rest of nature. Nature connectedness is a measurable psychological construct that moves beyond contact with nature to an individual's sense of their relationship with the natural world.<sup>24</sup> The Nature Connectedness Research Group at the University of Derby led by Professor Miles Richardson recently published a report called "Nature and Me" which communicates the pathways to nature connectedness which provide a route for people to develop a new relationship with the natural world. This new relationship with nature can move beyond utility and control, beyond knowledge and identification. A new closer, healthier and more sustainable relationship with nature comes through noticing, feeling, beauty, celebration and care. The pathways are:

- **Senses** - tuning in to nature through the senses
- **Emotion** - feeling alive through the emotions and feelings nature brings
- **Beauty** - noticing nature's beauty
- **Meaning** - nature bringing meaning to our lives
- **Compassion** - caring and taking action for nature

<sup>16</sup> <https://www.persil.com/uk/dirt-is-good.html>

<sup>17</sup> <https://www.gov.uk/government/statistics/monitor-of-engagement-with-the-natural-environment-pilot-study-visits-to-the-natural-environment-by-children>

<sup>18</sup> <https://www.persil.com/uk/dirt-is-good.html>

<sup>19</sup> <https://www.rspb.org.uk/globalassets/downloads/documents/positions/education/the-impact-of-childrens-connection-to-nature.pdf>

<sup>20</sup> <https://www.scribd.com/document/87203073/National-Trust-natural-childhood-report>

<sup>21</sup> <https://www.ucl.ac.uk/ioe/news/2019/nov/spending-more-time-nature-can-improve-young-peoples-confidence>

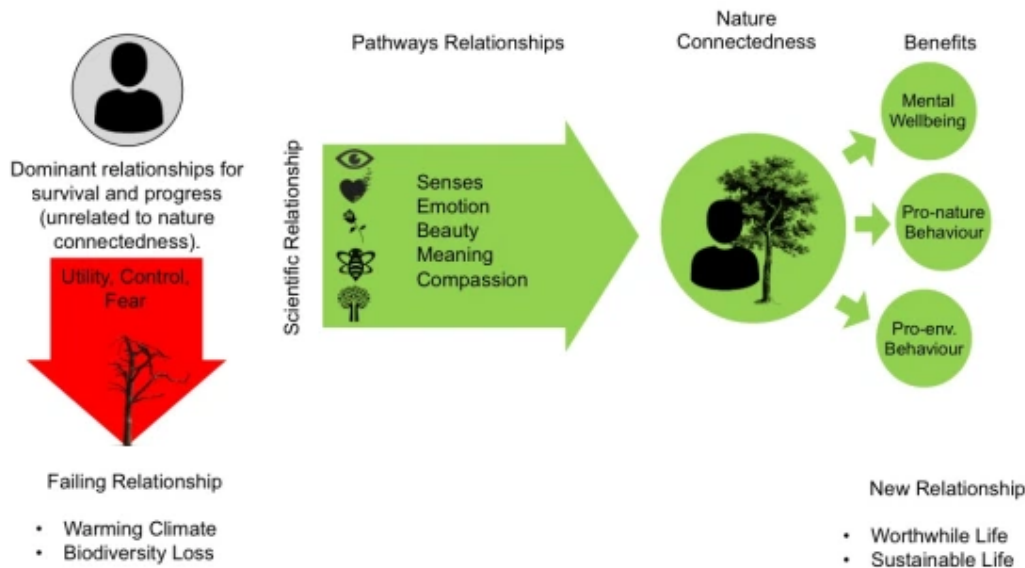
<sup>22</sup> <https://www.nature.com/articles/s41598-021-85825-y>

<sup>23</sup> <https://www.gov.uk/government/statistics/the-people-and-nature-survey-for-england-child-data-wave-1-experimental-statistics/the-people-and-nature-survey-for-england-childrens-survey-experimental-statistics>

<sup>24</sup> <https://www.derby.ac.uk/research/centres-groups/nature-connectedness-research-group>



The National Trust recently published 'Nature and Me'<sup>25</sup> a summary of Miles Richardson's research from the Nature Connectedness Research Group at the University of Derby. The booklet begins with the framing of the climate emergency, wildlife loss and mental health crisis and explores the role of developing nature connectedness within the areas of management and planning, wellbeing and fitness, learning and education, conservation and recreation. As shown in the diagram below, the focus is on the 5 pathways to develop relationships. The booklet also touches on the 'teenage dip' further explained in a blog post from Miles<sup>26</sup>. After the age of nine, levels of nature connection drop dramatically and do not recover for twenty years.



Richardson et al. 2020

A graphical summary of the types of human-nature relationships, nature connectedness and their outcomes. Key: Pro-env. = pro-environmental (carbon & resource use reduction); Pro-nature = pro-nature conservation (wildlife habitat creation).<sup>27</sup>

<sup>25</sup> <https://findingnature.org.uk/>

<sup>26</sup> <https://findingnature.org.uk/2019/06/12/teenage-dip/>

<sup>27</sup> <https://findingnature.org.uk/>

# Community

Rob Hopkins started the Transition Movement in Totnes in 2006. Transition Towns illustrate the potential impact of communities, when they come together to rebuild our world.

At the heart of an eco curriculum is the role of schools as a hub for their community. Schools act as a catalyst for wider societal change as well as much broader community and lifelong learning. Building learning deep into the core of a community is essential.

Building community resilience is another fundamental aspect of engaging schools with their local community. The Post Carbon Institute explores the six foundations for community resilience<sup>28</sup>:

- ❑ **People** - The power to envision the future of the community and build its resilience resides with community members.
- ❑ **Systems thinking** - Systems thinking is essential for understanding the complex, interrelated crises now unfolding and what they mean for our similarly complex communities.
- ❑ **Adaptability** - A community that adapts to change is resilient. But because communities and the challenges we face are dynamic, adaptation is an ongoing process.
- ❑ **Transformability** - Some challenges are so big that it's not possible for the community to simply adapt; fundamental, transformative changes may be necessary.
- ❑ **Sustainability** - Community resilience is not sustainable if it serves only us, and only now; it needs to work for other communities, future generations, and the ecosystems on which we all depend.
- ❑ **Courage** - As individuals and as a community, we need courage to confront challenging issues and take responsibility for our collective future.

Engaging more directly with the local community also assists in fostering positive relationships and building human connections. The European Commission recently reported on research highlighting the reciprocal benefits of intergenerational relationships. Relationships between the elderly and the younger generation make us feel connected in several ways. They make us feel linked not only to each other, but also to something bigger, to the past and to the future. Thus, this connection leads to many benefits for all generations.<sup>29</sup>

Communities offer the opportunity to share local knowledge and emphasise the importance of storytelling. Bobette Buster in her recent TEDx Talk 'The Radical Act of Storytelling'<sup>30</sup> discusses the potential of sharing both the destructive power of bearing the untold story, and the new storytelling tools now available to release long-buried stories, to generate healing and make movements that can transform our world. She calls us to cultivate storytelling, so that the living memory of tragic events cannot become buried or lost, and so that history cannot repeat itself. Storytelling within local communities has the potential to heal relationships and help develop a sense of identity and relationship with the world.

Communities also harbour local knowledge and skills which can be shared with schools.

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<sup>28</sup> <https://www.resilience.org/six-foundations-for-community-resilience/>

<sup>29</sup> <https://epale.ec.europa.eu/en/content/benefits-intergenerational-relationships>

<sup>30</sup> [https://www.youtube.com/watch?v=gE18wH9\\_e6U](https://www.youtube.com/watch?v=gE18wH9_e6U)

There are a variety of ways schools might play an increased role at the centre of their community. These might include shared spaces, allowing community groups to use space within the school or manage outdoor spaces. Children might volunteer within the local community on a weekly basis or offer teaching to groups within the community.

## Adventure

Matt Walker, adventurer and leadership expert, is quoted as saying “Adventure is the willingness to commit to an uncertain outcome with an open heart.”<sup>31</sup> He says there are five key components of adventure: ‘high endeavor’, the ability to think big; ‘total commitment’, the willingness to embrace challenge; ‘an uncertain outcome’, a necessity to keep us engaged and aware; ‘tolerance for adversity’, the ability to remain resilient; ‘great companionship’ to make the journey not just possible but also worthwhile. He adds: “Adventure is not reserved for the extreme athlete or the daredevil. It is an attitude and lifestyle choice. It is an expression of your heart's intention and passion for life.”

This idea of Living Adventurously is an attitude of open mindedness and curiosity which Alastair Humphreys communicates and promotes through the concept of Microadventures. Alastair describes this as “Doing stuff that feels risky, exciting and uncertain and fun to you” as a part of your everyday routine.<sup>32</sup> In Alastair’s most recent Do Lectures talk he explains how anyone can embed adventurous approaches into their everyday life by choosing to make simple changes to our everyday routines.<sup>33</sup>

Ideas of Living Adventurously have great potential to invigorate and shape an eco curriculum.

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<sup>31</sup> <https://www.suunto.com/en-gb/sports/News-Articles-container-page/The-Adventure-Mindset/>

<sup>32</sup> <https://www.youtube.com/watch?v=R1Bo3rzMWNc>

<sup>33</sup> [https://www.youtube.com/watch?v=glqpY\\_9Rj9s](https://www.youtube.com/watch?v=glqpY_9Rj9s)

