

Conversations across international divides: Children learning through empathy about climate change

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Abstract

Primary school curricula often largely avoid the climate crisis, and teachers feel ill-equipped to teach it. In the secondary school curriculum, the climate crisis is generally addressed only in specific subjects such as science or geography. Our own and others' research indicates that children are curious about climate change and become less anxious when they feel agentic in facing its effects. The challenges of everyday life for children in parts of the world severely affected by the rapidly changing climate are seldom included in educational contexts. This article reports on a project that linked a school in a UK town with a school on a Fijian island to explore a holistic approach to understanding the impacts of climate change. The children aged 9 to 11 built friendships across the globe through film messages, email, written letters, and drawings. As part of getting to know one another, the children asked and answered questions about their lives. Those questions and other creative activities revealed children's interests and priorities and the extent of their local and global knowledge and enabled us to consider a personalised approach to climate justice. By co-creating and exchanging their stories the children could begin to understand the social and emotional impacts as well as the science of climate change. We discuss the role of empathy in children's learning about climate change, and consider how connections across international divides can be facilitated.

KEYWORDS

climate justice, education, empathy, international collaboration, learning, primary school

1 | INTRODUCTION

The project central to this article involved an attempt to create a way for children in parts of the world to learn about climate change by exploring the issue from the perspective of what interests them and what they already know. The project helped children in widely varying communities to communicate with one another and understand contrasting geographical circumstances and contexts. It is not new to suggest either that children's learning should begin from what they already know or that social interaction and learning by

doing are crucial elements in making learning meaningful for children. These principles underlie this project, which ultimately aims to enhance empathy by understanding more about other people's lives through social interaction (see Dewey, 1916, 1958; Öhman & Öhman, 2013). Empathy can be defined as feeling *with* others rather than *for* others (Brown et al., 2019; Eisenberg, 1988) and, when associated with the climate crisis, might be expected to result in increased interest in, concern about, and motivation for change (Wolf & Moser, 2011). By moving away from a purely scientific approach and by recognising the social

injustice that accompanies the climate emergency, our project is relevant to a climate justice framing in an attempt “to radically change the way we communicate and teach about climate change” (Stapleton, 2019, p. 733). Bringing children from vastly differing carbon-intensive countries into conversation with one another allows them to see “with their own eyes” that the crisis is global and those who have contributed least to it are suffering the most (Pettit, 2004).

Despite research demonstrating that children’s existing knowledge is the foundation of learning, climate change education and research are generally missing children (Cutter-Mackenzie & Rousell, 2019). Children are also absent as producers of climate-related stories or as advisors on school curricula suitable for their own futures. In this time of great uncertainty, when children are positioned as responsible for saving the planet yet deprived of effective climate education (Brownlee et al., 2013) and political agency, there are calls for new ways of thinking and being. In line with Kagawa and Selby (2010, p. 4), our research project arose from a consideration of “what really and profoundly matters, to collectively envision a better future, and then to become practical visionaries in realizing that future.”

Learning about the lives of “real” children, with whom the children have direct (albeit virtual) contact, means that empathy develops alongside new knowledge, thereby enhancing that learning (Cooper & Jacobs, 2011). Researchers have found individual stories to be the most effective in communicating emotional aspects of climate change (Crate et al., 2017; Sheehan et al., 2019); they are a means by which to understand the impact of diverse ways of living among distant communities. As the project develops, we will build on the “small stories” (Georgakopoulou, 2007) built through conversations between the children. In work forthcoming, fictional stories co-produced with children about the impacts of the climate crisis on human and other species’ lives will feature as a means of evoking empathy from those who engage with the stories (Jarvis & Gouthro, 2019; Oatley & Djikic, 2018), both during their creation and as outputs (Satchwell, 2019). The focus of this paper, however, is on earlier parts of the project, which explored children’s perceptions of the climate crisis and brought them into conversation with one another.

2 | RESEARCH AND GEOGRAPHICAL CONTEXT

Scientific evidence is overwhelming: the world is experiencing an increasing number of climate-related events such as floods, fires, and heatwaves, leading to devastated landscapes and giving rise to food and water shortages, diseases, displacement of human

Key insights

This study found that learning about climate change was not necessarily a preferred topic for 9–11-year-old children in two schools in the United Kingdom and Fiji. Although they expressed concern, the UK children’s existing knowledge was partial, abstract, and did not recognise links between everyday life and climate change. By asking and answering questions across the globe, children came to experience empathetic connections with one another, and to see relationships between, for example, energy use, food production, deforestation, and climate change. On that understanding, we argue that collaborative and creative climate justice education is essential to engender informed and appropriate responses to the climate emergency.

populations, and armed conflict (Barnett, 2020; Bendell, 2018; Clayton et al., 2017). The South Pacific Fijian islands have been recognised since around 1990 as being at severe risk of human-induced climate change and yet too little has been done to implement practical adaptations or to understand how climate change effects might affect local people’s lives (Campbell & Barnett, 2010).¹ Those effects include raised sea surface and air temperatures, rising sea levels, and intense sporadic weather events, leading to both drought and floods, increased cyclones, and storm surges (Campbell & Barnett, 2010). The impacts are potentially devastating for the islands, as ecosystems are destroyed and people’s homes, food sources, and livelihoods are threatened.

Nor is the United Kingdom (UK) exempt from such events and outcomes. Disruption to agriculture and food systems, and widespread flooding are no longer news, while extreme summer heat led to a “death spike” in the United Kingdom in 2019 (BBC News, 2019), and unpredictable climate events are becoming more frequent and more severe. While many, including children in this study, still see the effects of climate change as taking place elsewhere in the world, the United Kingdom is experiencing intensifying weather events, including flooding, storms, and heatwaves (Met Office, 2020).

Dealing with uncertainty is itself psychologically and practically challenging and having some idea of possible scenarios can simultaneously be terrifying and enlightening; little wonder mental health and wellbeing have become a twin focus for climate-related research and practice (Berry, 2018). It is evident that individuals, communities, and governments exhibit “cognitive dissonance”—being strongly aware of the reality of anthropogenic climate change and its current and future

impacts, while seeming to exhibit indifference and failing to act (Kahan et al., 2012). Reasons for such responses include conflicting values, confusion, fear, and feeling overwhelmed, which are not aided by dominant global political and economic forces (Urry, 2005) and socially organised forms of denial (Norgaard, 2011).

Children are particularly susceptible to experiencing stress from climate-related impacts (Hickman et al., 2021) resulting in changes in development, behaviour, decision-making, and academic performance (Crandon et al., 2022). However, researchers suggest both that talking with children can give a “fresh perspective on the absurdity of doing so little about climate change” (Hickman, 2019) and that young people are more likely to feel positive about the future if they engage in action (Verlie, 2019).

South Pacific island researchers have argued the need for culturally appropriate responses to the climate emergency; for example, Lagi and Armstrong (2017), Luetz and Nunn (2020) and Nunn et al. (2016) have variously discussed the importance of drawing on local cultural knowledge, faith, and attitudes to nature. Prasad and Mkumbachi (2021) have explored differences in students’ beliefs about climate change at the University of the South Pacific and concluded that climate change education needs to be embedded in the higher education curriculum. In turn, the UK government has stated: “Learners need to know the truth about climate change—through knowledge-rich education” (DfE, 2022). However, currently, the UK primary school curriculum largely avoids reference to climate change, and 70% of teachers feel ill-equipped to teach it (Teach the Future, 2021). The challenges of everyday life for children in parts of the world severely affected by the rapidly changing climate are seldom included in education and yet the UK government aims to “empower all young people to be global citizens, through a greater understanding of climate change; and greater connection to nature” (DfE, 2022). This inconsistency appears to be replicated in small island contexts with colonial pasts, among them the Fijian islands (Baldacchino, 2018).

Despite the absence of appropriate curriculum content, our own and others’ research indicates children are curious about climate change (Satchwell, 2013, 2016) and become less anxious when they feel agentic in facing its effects (Verlie, 2021). Adaptation and resilience-building are needed to address all aspects of the climate crisis, including mental and physical health and well-being and, we suggest, they should be based on perspectives held by children themselves. Resilience must be considered in multi-dimensional ways—including infrastructure, skills development, social integration, and individual and community capacity-building (Peredo Beltrán, 2014); it will also require collaboration, flexibility, and adaptation (Tyler & Moench, 2012). On that basis, our project aspires to

address skills and capacity-building by focusing on collaboration and adaptation as understood by children on opposite sides of the world. We use creative methods and story-making and assume the importance of imagination, collaboration, and cooperation for societies facing extreme challenges and we hope to inspire children to seek and enact such responses.

The two settings—a Fijian island and a city in northern England—are contrasting. Ovalau, adjacent to Fiji, is 13 kilometres (km) long and 10 km wide, with a population of nearly 10,000 people. Fiji and its associated islands gained independence from Britain in 1970. The climate is tropical, with a hot, humid, and rainy season from December to April followed by a drier, cooler season from June to October. Temperatures range from 20°C to 30°C, with an average of 252 millimetres (mm) of rain per month. The UK school is located in a suburb of a city in northwest England. The city has a population of 148,000 and a wide range of levels of deprivation within it. The area where the school is situated is high in deprivation according to UK government statistics (Lancashire County Council, 2023). The United Kingdom has a temperate maritime climate and changeable weather. The city experiences average temperatures of between 5°C and 19°C over the year and an average of 34.5 mm of rain per month; this is slightly cooler and wetter than England as a whole.

3 | PROJECT RATIONALE

There are two main premises for the project. One is that children have important things to say about responding to climate change but are rarely given the opportunity to contribute (Gibbons, 2014). The second is that connecting with others through dialogue and sharing stories is an effective means of learning about others’ lives and experiences and imagining new ways of being. While stories and storytelling have been used in research relating to climate change (Moezzi et al., 2017; Morris et al., 2019) and stories of resilience have been collected (Janif et al., 2016), there is a lamentable absence of children’s voices in the debate and in climate education practice and policy (Barratt Hacking et al., 2013; Rousell & Cutter-Mackenzie-Knowles, 2019). Education plays a key role in preparing children and young people to make informed choices in everyone’s interests (Dewey, 1916; Dunlop et al., 2021; Lawson et al., 2019; White, 2020). But children are potentially being educated for “the wrong future,” exacerbated by the separation of arts from science and the demotion of the affective and relational aspects of life in the classroom. Children and young people, it seems, are therefore being inadequately equipped by formal education to become agents of change, and need skills and knowledge to help them see a more nuanced picture of the climate emergency.

Young people's conceptual knowledge of climate change is often criticised as limited and erroneous (Lombardi & Sinatra, 2010). While Tagg and Jafry (2018) have found that young children are able to engage with complex concepts of climate in/justice, their project involved a process of "translation and communication" before being presented to children. Instead, this project has involved children driving the investigation themselves, drawing upon others' real-life experiences. Our vision is for these methods eventually to result in authentic co-produced learning resources for children and recommendations for curriculum change based on children's interaction with the world (Osberg & Biesta, 2008).

As a first step, the project brought together the two schools in Fiji and the UK. We designed a set of workshops to facilitate children's participation as co-researchers to explore their existing understandings of climate change; perceptions of climate change impacts in their own and each other's localities; and desires to know about one another's lives and what they might need to know in relation to building a sustainable future. Here, we focus on initial findings related to children's interests, existing knowledge, and gaps in understanding about one another's culture and experiences of climate change. We highlight some of the challenges with the project to date, explore how empathy has played out, and consider how we intend to develop the project and build on what we have learned.

4 | METHODOLOGY

The project built on an existing connection with an academic at the University of the South Pacific, who facilitated a link with the island school. A school in a small city in North-West England with which researchers were already working also agreed to take part. Ethical approval was granted by the UK university ethics committee and agreed upon by the Ministry for Education in Fiji. As one of the settings was in a lower-income country, each of the articles outlined in the Global Code of Conduct for Research was addressed to foster fairness, respect, care, and honesty for Fijian participants. Informed consent was gained from each child's parents, and assent from the children was confirmed at the beginning of each workshop, with the option to opt-out if they chose (although none did). Eco-anxiety was considered and monitored throughout: researchers proceeded with caution, keeping the tone light and including fun activities in all sessions. The project began with 24 children in Year 5 in the UK and stayed with the same children into Year 6. They were therefore aged 9 to 11 during the project. The 21 children in the South Pacific ranged in age from 9 to 12. Both cohorts included mixed genders.

We sought to conduct participatory research whereby children would be positioned as co-researchers rather than subjects (or objects) and we would learn equally from one another (Larkins & Satchwell, 2023). Although we do not claim that the project was "child-initiated," we strove to include "shared decision-making with adults" (Hart, 1992; Shier, 2001, p. 108), and underpinning the work are the four dimensions of space, voice, audience, and influence in Lundy's (2007) model of participation. This shared decision-making meant that, although the adults introduced climate change into activities, UK children often diverted conversations to more immediately relevant subjects such as types of food eaten, sports, or life at school. These conversational topics therefore became a means for children to engage with one another, as a precursor to engaging actively with the subject of climate change, rather than relying on passive ways of transmitting information (Freire, 1970) traditionally used in this subject (Dunlop et al., 2021). It was important that children and adults collaborated and that children worked together, finding mutually effective ways to communicate both in their own classrooms and between classrooms across the two locations. Limited research funding allowed us to purchase a mobile phone, laptop, and projector, which we sent to the Fijian school. These enabled films to be produced and shown in both schools. Synchronous communication via telephone was possible between the adults involved, but the 12-h time difference precluded the children from directly talking with one another. Instead, children communicated through written text, drawings, and filmed messages. The intention was to facilitate mutually beneficial opportunities for sharing and learning in the two contexts. However, while all the children enjoyed the experience, there is clearly asymmetry between the two settings in the types and amounts of data collected, the imbalance between child and adult inputs, and the potential and perceived benefits. As elaborated in the discussion below, we are attempting to redress these shortcomings in developing the project.

After initial links between the schools were made, in the UK school face-to-face workshops facilitated by three authors took place over two school years. A teacher remained present in the classroom but stepped back from running the sessions. As researchers, we had an outline plan, but the children generally led the discussions and we facilitated. Throughout, we emphasised both that we were interested in their perspectives and that there were no "correct" answers or contributions; rather, they could join us in a quest to find out more. The first UK workshop introduced the children to the Fijian island, providing simple geographical information and then focusing on the partner village school. A facilitated discussion enabled the children to voice initial comparisons and contrasts with their own school.

In other UK workshops children explored what they understood about climate change in general and in relation to their own experiences, and considered what they wanted to know about Fijian children's lives. They also provided information about themselves, their lives, and their education that they thought would interest the Fijian children. A creative exercise involved children drawing and writing about their own environmental superheroes, identifying what superpower they would use to combat climate change. While we acknowledge the concept of a superhero implies individualised and unrealisable solutions, the activity was designed to pinpoint issues children deemed most important and to flesh out how they might be addressed.

Children often worked in pairs or small groups and discussed their activities with one another as they wrote and drew on A3 or A4 paper. At various points during the workshops, they were invited to step into the school playing field outside their classroom to be filmed asking questions and sending messages to the Fijian children about their lives and their experiences of climate change. We sent the films by email and WhatsApp to the partner school, where responses were elicited from the children and filmed using the project smartphone. That footage was then returned to the UK research team and the two sets of footage were edited to create a series of exchanges of accounts of life on the two islands, including what they liked about where they lived, their schools, everyday lives, thoughts about climate change, and whatever else they chose to comment on. Following each event, children's contributions were collected, photographed, transcribed, and analysed to collate themes that informed the planning of later workshops.²

The workshops undertaken in the Fijian school were solely facilitated by the head teacher (fourth author) and generally took place in response to the activities and film footage sent by the UK researchers. We are aware that this imbalance was then reflected in exchanges between the children. The asymmetry was partly because the project was instigated by the UK university researchers with no funding for providing equivalent research personnel, and therefore the Fijian islanders "followed the lead" of the UK partner. The children were filmed asking questions about everyday life and experiences of climate change, and responding to the UK children. Having received the letters written by the UK children, the children responded with their own letters. This process meant that the Fijian children's involvement was more reactive and less reciprocal than it might have been had the project been developed more equably initially—a learning point for the research team.

5 | DATA ANALYSIS AND FINDINGS

Each session in the UK school produced multimedia and multimodal data in the forms of writing, drawings,

photos, filmed questions and statements, and the researchers' fieldnotes and reflections. Data from Fiji arrived as filmed messages, WhatsApp and email conversations, and written letters. The three UK authors undertook an iterative analysis of the digital and paper-based data, with individual and then collective reading, viewing, and interpretation as new data were added. This section presents the data from our workshops, including an overview of the themes that emerged, with examples from each. The findings fall into two categories: children's knowledge and concerns about climate change, and children's interests and priorities as revealed by their communication with one another.

5.1 | Children's knowledge and concerns about climate change

To investigate the "base level" and depth of UK children's knowledge and understanding about climate change, we initially asked them to share what they understood about climate change and where they had sourced their knowledge. They worked in small groups and drew and wrote on large sheets.

Responses included numerous references to global warming, deforestation, fires, pollution, and toxic gases. Their comments implied causation and explanations that made sense to them, even if they were not scientifically accurate. For example, "the sun is making everywhere on fire" and "the sun is getting way too hot" point to some misunderstanding about the causes of increasing heat; while linking warming seas to rising sea levels implied a logical connection had been made; for example, "some of the ice is melting which could end in floods in islands and killing most of the animals that live there such as a polar bear or seal" and "the water temperature is rising and the fish are going to cooler waters." Some children provided more complex explanations. For example:

People are cutting trees and burning forests etc. but because of this the trees cannot absorb toxic chemicals and this is causing the Earth to overheat and will be too hot to survive, in addition, if the chemicals are not consumed by the trees, it may cause a virus, a radioactive source or a toxic reaction.

That child had made multiple connections and extrapolations, including mention of a virus, which was a rare insight, even though we worked together only one year after experiencing multiple lockdowns because of the global COVID-19 pandemic. Another child wrote:

Deforestation is very bad and no one should cut the trees down. Because where would the animals live if there was no trees left. We would also lose lots of oxygen.

Deforestation and fires were perceived as significant threats to humans and other species. For example: “deforestation could kill animals in the trees and ground” and “when you cut down trees carbon dioxide could kill us and the animals.” References to toxic gas were frequent, posing a threat to animals, plants, and humans: “toxic gas is SPREADING around our beautiful plants;” and “factories are producing toxic into the air and if we cut down trees then there will be toxic in the air. If there is toxic in the air then there will be no humans in the world.”

Extreme weather events—tornados, droughts, and floods—were mentioned, as were non-climatic events such as earthquakes. The need to support those affected was emphasised; for example, “donate to people because people got caught in a storm,” and “earthquakes can kill way too many people.” When asked about sources of information, children cited school lessons, television documentaries, YouTube videos, news programmes, social media posts, and radio.

Although the children showed genuine concern about disasters, including forest fires and deforestation, and saw them as existential threats, they tended to perceive them as distant from their own experiences. Specific geographical areas referred to include the Amazon rainforest, drought-ridden Morocco, and ice caps, all of which were thousands of miles away. Nonetheless, after conversing with their Fijian counterparts, the UK children referred to climate and environmental issues which they recognised as immediately relevant to the former’s context, among them rising sea levels and plastic pollution. Yet, when asked by Fijian children about the effects of climate change in their own lives, even though these issues are also relevant to the UK they tended to deflect the question with comments such as “our country isn’t really that hot.”

More of the UK children’s concerns emerged when they invented a superhero to respond to the climate crisis. This activity helped us to understand the children’s perceptions of the main problems and their ideas for potential solutions. Later, the children developed their superhero inventions into written stories with illustrations. In total, 23 environmental superheroes and three environmental villains were created. Eight superheroes related to deforestation. Of these, two deforestation-themed superheroes (Super Lola and Super Lisa) not only “save the trees from deforestation and fires” but also pause time just before they cut down the trees so that “if someone is going to do a fire, [they] stop them” and provide time for them to think differently and change their minds. “Defori girl” is more responsive and “fixes chopped down trees.” One superhero simply

states: “we need to not cut down trees, we need to plant them.” A character called “Veronica Green” “makes the grass vibrant” and “kills people who cuts down trees,” while “Half tree man half water” has a superpower that “shoots water out of his hands and plants tree seeds with the other” showing an understanding of what is needed to make things grow. Three superpowers envisaged by the children were sea-related (Figure 1). “The Sea Dude” and “The Ocean Dude” collect ocean waste, with the latter explaining in a speech bubble: “I just watched that person throw rubbish in the water so I’m going to get their rubbish, and there is fish in the water and they might get stuck in the rubbish.” The other superhero “turns water into ice and makes the ice invincible.”

Three fire-related superheroes included the “Fire absorber” and “The water boy” who is “bringing the water to the fire.” “Freedom Freezer” “can shoot fire with his sunglasses” and “shoot ice” from his hand and “loves pineapple pizza” (Figure 2).

Other superheroes include “The recycler” who can “turn gas into recycle trucks;” the “Tornado collector” with “super strength” to “collect tornados and use them;” “Toxi man,” who “can breathe carbon dioxide and makes it into oxygen” (Figure 2). “Mr Bear” is described as a “helper” who “helps people save the island;” while the character “Paper” “can frost water and create icebergs helping lower global warming.”

Two of the heroes display multiple powers. “Earth man” specialises in “evacuation” and has “bushy hair” which “controls fires.” He “destroys powerplants” and has a “mind controlling outfit” and “mind controlling boots.” The other multi-skilled superhero’s powers include: “summoning plants, absorbing carbon dioxide, change climate, make more food, lower the sea level.”

Complementing the superheroes, two villain characters were also created: “Mr Warm” “lights everything on fire” (Figure 3) and “Mr Gas” “makes everything die.” An example of one child’s confusion around the subject—possibly combining influences of news about the excessive cost of petrol at the time—was the creation of “Petrol man,” who was presented as doing good because he “provides people free fuel” and “holds infinite fuel.” It should be noted that some children collaborated on this task and produced superheroes with similar powers. Nonetheless, there were identifiable common themes: putting out fires; stopping deforestation; refreezing oceans and icebergs; planting trees; ridding the atmosphere of greenhouse gases; cleaning up oceans; and recycling.

Some solutions involved “stopping time” or turning back the clock by “refreezing icebergs,” for example. Children’s introduction of the power to change the way people think, or forcing them to stop and think, as a solution to these problems was a notable finding. In a sense, this was the focus of the project: introducing new ways of thinking and being by learning about life in



FIGURE 1 Sea Dude character and story extract.



FIGURE 2 Freedom Freezer and Toxi man characters.



FIGURE 3 Supervillain Mr Warm and story extract.

different global contexts. We are awaiting the results of the Fijian children's superhero inventions, which will provide interesting comparisons.

5.2 | Children's interests and priorities as revealed by their communications

In the first workshop, given free rein to ask their Fijian partners questions, albeit with a gentle steer towards climate change, the most prominent topics for the UK children were food production and consumption; multi-culturalism; weather, climate, and nature; pets and animals; sports and play; houses/buildings; transport and travel; shopping, money, and employment; technologies such as the internet and video games; school; and relationships.

Understandably, these topics related to children's everyday lives and did not reflect a particular interest in climate change, despite our steer. Their questions, however, indicated genuine curiosity about many aspects of one another's lives and facilitated personal connections. In this section, more detail is provided for some categories, and shorter summaries are given for other topics. Later we discuss some climate justice implications not initially considered by the children.

Food was a favourite topic. For the UK children, there was a noticeable emphasis on fast food, with examples of their filmed and written comments and questions:

We have really nice varieties of food like fast food restaurants like McDonalds and KFC. Do you have nice food? Have you ever tried fizzy drinks or snacks especially popular sweets called Haribos!!!

In response to the filmed questions posed, the Fijian children said:

We do not have fast food restaurants like McDonalds or KFC. We mostly eat foods from the farm and fish from the sea. We always have fruits for recess. We are not allowed to eat junk snacks in school.

When the UK children were shown the film that included this explanation, several expressed incredulity at an existence without burger or chicken outlets. One UK participant commented: "they eat loads of vegetables and stuff while we have McDonalds and KFC." Because the children were not able to communicate synchronously due to the 12-h time difference, the following conversations are re-constructed from filmed or written questions and answers and presented in a series of tables.³ The contrasting approaches to food remained a topic of interest throughout the project (Table 1).

The weather and climate were addressed in the following constructed conversation (Table 2).

TABLE 1 Conversation topic: food.

Question		Answer	
F:	"Do you have a canteen in your school? What do they sell?"	UK:	"Yeah, we do have a canteen and we have three different choices every day. Such as today, we have 1: bolognaise, 2: cheese whirl, and 3: a sandwich and the choice on the sandwich, cheese, ham or tuna."
UK:	"Do you also kill your animals to eat them? And how would you cook them if you did?"	F:	"We eat the flesh of cow, beef, chicken, pig and pork. And goat and sheep as well. We can boil, fry or put in the oven."
UK:	"What type of crops do you grow?"	F:	"We grow crops. Cassava, taro, sweet potato ... bread fruit."
UK:	"How many fish do you catch every day?"	F:	"We only go fishing on the holidays or at the weekend. At times we can catch 3 or 4 fish."

TABLE 2 Conversation topic: weather and climate.

Question		Answer	
UK:	"How nice is it over there? Like, the weather wise?"	F:	"It's warm here at our school and village. Right now, the early mornings are cold. Not too cold like the United Kingdom. Our normal day temperature would be 19 degrees to 24 degrees. We only have two seasons. They are the wet season and dry season. The wet season would be between November and April and this is our hurricane season as well."
UK:	"Sometimes do you have bad weather? Because we have quite a lot of bad weather except for the summer but sometimes in the summer it can rain."	F:	"We usually have sunny weather, like today! During wet season we have a lot of rain. Our country experiences flood and hurricane at times. This is mostly during raining season. We need to build strong sea walls to prevent the destruction of the rise in sea levels in our village."

The references to extreme weather and the rising sea here were embedded in a filmed message from a smiling child and might easily have been missed. Similarly, another child mentioned:

F: "Some natural disasters we have faced are: hurricane, cyclone, slides, landslides and tidal waves."

It is noteworthy that the Fijian child referred to "natural disasters." These events are much more extreme than those experienced by the UK children and their increasing severity is undoubtedly connected to climatic changes brought about by humans (IPCC, 2021). Showing the film to the UK children presented an opportunity for them to think further about the real impact of carbon emissions experienced by their peers overseas. The children in the UK demonstrated concern about fires (possibly having seen films of house fires in London during a hot summer in 2022): "Have there been any fires recently? (because of climate change and because it's so hot)" and extended this to forest fires and deforestation, about which they had been taught at school and seen footage on news items.

These concerns also emerged in questions to and from the Fijian islanders (Table 3).

As shown in the exchanges above, UK children downplayed the threat of fire in their own country, and although they mentioned floods and droughts, they were mostly concerned other countries.

The contrasting **landscapes and geographical events** were features of interest (Table 4).

The UK children introduced the topic of recycling, and this was responded to by the Fijian children (Table 5).

Interestingly, on the subject of climate change and nature, several UK children also looked to the Fijian island for **help and advice**, and it was notable that they perceived these children as a more knowledgeable other (to use a term from Vygotsky), stating:

We just want to know a lot about your island and like, how we can use some of your ideas.
I wonder what events happened that damage the climate. I wonder how they keep their island so tropical.

TABLE 3 Conversation topic: environmental issues.

Question		Answer	
UK:	"Is there a lot of deforestation in your country?"	F:	"There are a lot of trees and mountains near our school" "We lessen the burning and cutting down of trees."
F:	"Do your school experience the effects of climate change? Do you have bush fire?"	UK:	(1) "Yeah, sometimes we have bushfires. Not a lot though, because our country isn't really that hot. In other countries we are sometimes known about other droughts, such as in 2020 Morocco experienced the worst drought in years." (2) "Floods and droughts"

TABLE 4 Conversation topic: landscape and geography.

Question		Answer	
UK:	"There is a stream near my house, it's like a ten-minute walk from where I live. It's really nice. Do you have any streams where you live?"	F:	"We have a river near our school. Our village is nearest to the sea. During the school holiday we usually swim every day."
UK:	"Do you have a volcano and has it ever erupted?"	F:	"We do not have any active volcanos. Our island is only regarded as a volcanic island because of the rocky volcanoes"

TABLE 5 Conversation topic: recycling.

Suggestion		Response	
UK:	"Instead of chucking rubbish in the beach recycle. Because fish and animals in the beach die from littering."	F:	"We do not burn our rubbish at school. Plastic and papers are usually collected for recycling. We do not burn our bushes. We need our grasses if you want to use a piece of land for planting or building."

Perhaps perceiving the Fijian children as living more closely with nature, a UK participant asked:

How can we take care of amazing tropical plants like you have in our weather and climate? Do you have any tricks of gardening? I have sunflowers in my garden and I can't wait to see how beautiful they'll look so I'd like to know how I can grow them even faster.

These questions largely remained unanswered, but one Fijian child asked in return: "How do you keep your environment pollution free?"

Other topics the children were interested in were related to everyday and cultural activities, highlighting both similarities and differences in the children's lives. They discussed **sports and leisure activities**, with the UK children mentioning football, hockey, netball, rollercoasters, climbing frames, and indoor activities relating to toys, video games, internet and Wi-Fi, social media, and Disney films. In response, the Fijian children explained:

We do not have entertainment centres for video games. But we play billiards.

We have access to internet but at times because of our location we experience low connectivity. Our school doesn't have a computer lab so we usually use our office computer for research work.

In a class discussion in the UK, one participant expressed her surprise at this:

They don't have like, Wi-Fi and computers and stuff like we do and we take advantage of that [meaning "we take it for granted"] because we don't know how many people don't have that.

Multiculturalism featured strongly, with mutual interest in ethnicities, languages, religions, and festivals. They also discussed modes of **transport**, **pets**, and what their **houses** were made of. The UK children were interested to find out that on the island "Some have bamboo houses and some have thatched houses made from reeds, leaves and timber." In turn, the Fijian children were surprised to hear about electric cars: there are very few cars in their village and they found the concept of electric cars "cute" and interesting.

The UK children asked about **shops, shopping, and money**, for example: “Do you have money?” or “What kind of shops do you have?” or “Is your island in financial problems?” This interest in shopping for the children in England was reiterated in what information they chose to give, such as “I like the way there is a lot of shops nearby” or “It takes me a few seconds to get to the shop. I ride my bike there.” The contrast with life on the island was highlighted by the lack of questions about this topic from the Fijian children.

UK children also asked about **employment** (Table 6, below).

A major topic for both sets of children was **school**: uniforms, lessons, playing field, break times, school library, assemblies, singing, and so on. They also discussed **relationships**: the importance of their friendships, and the “nice people” they knew. All these questions showed a real interest in how other children lived, in how similar they were, and yet how different their lives were.

6 | DISCUSSION

It is important to note that because initial contributions came from the UK children, their interests tended to lead the conversations, with the Fijian islanders providing answers and returning comparable questions. As a counterbalance, pending exchanges we have arranged with schools on another Fijian island and in Pakistan will explore the interests of the overseas children independently to establish their priorities before bringing them together with children in the UK. Otherwise, the project is in danger of perpetuating rather than redressing climate injustice.

The data from working with both sets of children show the breadth of their interests as well as the extent of—and some gaps in—their knowledge. Climate change was not necessarily a preferred topic in either location, and our attempts to refocus the UK children were occasionally met with a sigh, and on one occasion a child asked: “What is climate change?” even in the midst of a discussion about it. Indeed, the reluctance to discuss it was due partly to a lack of understanding: more knowledgeable children were more likely to ask questions about it.

Climate change was also perceived as lacking relevance. At the beginning of the project the UK children largely saw climate change as an abstract concept that had no grounding in their own everyday experience, although they expressed concern about deforestation,

forest fires, and pollution. In contrast, the Fijian children were experiencing unusual weather conditions, which they discussed “every day” at school: the head teacher, our fourth author, has noted that “climate change is really taking its toll.”

In addition, while the UK children acquired some knowledge about climate change, largely from school and social media, television, and the internet, they did not always make connections between various aspects of life and the impacts of climate change. For example, it was striking that two of their major preoccupations were a love of fast-food restaurants and a desire to stop deforestation. They had not made a link between these two matters, even though “Industrial meat is the single biggest cause of deforestation globally” (Brown, 2022).⁴ Similarly, the UK students’ interests in the internet, computers, and video games can be set against their concerns about global warming. The children realised that they took for granted their internet connectivity in comparison with the Fijian school to which we had sent a computer, projector, and mobile phone. Yet a book by James Bridle (2018) and newspaper headlines such as “Computers ‘worse for environment than plane travel’” (Independent, 2021) explain how new technologies contribute to climate change. These links are news to children and also to many adults. There are clear gaps in understanding, which a more integrated educational approach can help to fill. For example, the researchers used the children’s interests to begin a discussion about the links between food production and deforestation, and another about the relative impact of writing on a computer versus a piece of paper. The “friendly scientist” (a colleague from our university) played a role in addressing some of these misunderstandings.

The UK children became open to other ways of living because of their interest in varied ways of eating—growing fruit and vegetables, fishing, and killing their own animals for their own use—and building houses using natural resources. The Fijian children found the concept of electric cars a novelty and were surprised by the green spaces they could see in the UK video because they had assumed that urban settings were devoid of greenery. During the project, town-dwelling participants became more aware of the potential dangers of living on a small island exposed to rising sea levels and various forms of storms. In both settings, by registering similarities as well as differences, children began to see one another as “just like us really.” Learning first-hand about diverse ways of living, they were developing empathy and seeing connections with one

TABLE 6 Conversation topic: employment.

Question		Answer	
UK:	“What kind of jobs do you do as parents and adults?”	F:	“Some of our parents work in the Pacific fishing company. Some do farming and fishing.”

another, with climate change, and between local and global contexts.

During the life of the project, the children were also beginning to experience a sense of climate injustice. Their genuine mutual interest in multiculturalism speaks to an argument advanced by Nordstrom (2008, p. 131) that “environmental education and multicultural education can be considered as two parts of the same theme of how individuals and institutions can collaborate in building a better, sustainable world locally, nationally and globally.” The cross-curricular and cross-cultural approaches, combined with working with local storytellers, are intended to provoke “culturally-responsive environmental education” (Blanchet-Cohen & Reilly, 2017), informed by a climate justice agenda. The children’s interests in one another preceded their interest in the climate crisis; thus, we suggest that their social and personal connections engendered empathy and may have paved the way to a more meaningful engagement with this difficult topic. By discussing aspects of their lives that interested them, children began to see differences, connections, and alternative possibilities: “To take an interest is to be on the alert, to care about, to be attentive” (Dewey, 1916, p. 130).

In the UK schools, children’s reluctance to discuss climate change may also have reflected teachers’ lack of confidence in teaching it (Chatzifotiou, 2006; Teach the Future, 2021). However, the teaching staff who witnessed the workshops were inspired by the possibilities that the project provoked. It became apparent that the children were considering issues relating to science, literacy, numeracy, geography, religious studies, and personal, social, health, and economic education. In the Fijian setting, the project encompassed the topic “Earth and Beyond” in the Elementary Science syllabus as well as other subjects such as English. Indeed, the use of their non-native language was both a positive and negative aspect of the project, as it enabled the children to practise English but also caused some anxiety in having to use it. In both settings, we suggest that a holistic approach, whereby climate education is embedded across the curriculum, will raise the confidence of children to talk about—and therefore become more knowledgeable about—the impacts of climate change. The next steps of using a storied approach will further help to make the topic enjoyable and accessible.

For all learning to be effective, content needs to be relevant, personal, and relational. According to a systematic review on climate change education by Monroe et al. (2019, p. 799), the most effective programmes focused on “making climate change information personally relevant and meaningful for learners,” and “were designed to engage learners.” Our initial findings from this project indicate that connecting children who otherwise might have no understanding of one another’s lives enhanced empathy and led to

greater engagement with learning. While we are unable to replicate global education approaches involving exchange visits (Stapleton, 2015, 2019), our approach represents a relatively simple way for children to learn from and with one another, as a form of “creative, hopeful and inclusive climate change education” (see the introduction to this special section when the papers are assigned to an issue).

7 | CONCLUSION

To date, the project and its findings have shown that connecting children from two parts of the world can enhance understanding about climate change. However, reciprocity must be built firmly into its future development so that benefits are mutual, although not necessarily the same. The recognition of their similarities as children of comparable ages highlighted the widely varied circumstances in which they live. While the UK children had some understanding of climate change and real concerns about deforestation, rising sea levels, and air and sea pollution, these issues were given more relevance and immediacy in the context of their new friendships with a community in a more vulnerable setting. The UK children also learned first-hand about other, previously unconsidered, extreme events that their Fijian peers had to contend with. The Fijian participants learned about children’s lives in the UK and were equally curious about their clothing, food, transport, and environmental settings. Although the apparent lack of interest in climate change may be partly due to fear and anxiety (Hickman et al., 2021), it also seems to be linked to a simple lack of knowledge and understanding, which the current education system does little to alleviate. Indeed, children and teachers may be unwittingly complicit in the socially organised denial described by Norgaard (2011).

The project is ongoing, with additional schools set to join from Pakistan and small island communities in the United Kingdom and Melanesia. Participating children have told us they want to make more stories. Therefore, in the next phase, we advance “a storied approach to climate justice education to provide needed context, nuance and personal connection to the problem” (Stapleton, 2019, p. 736). Positioning the children as authors of their own stories (Satchwell et al., 2020) and working in collaboration with local storytellers to inspire imaginative responses and storify climate change action, we intend to explore a question posed by Gemma Sou (2023, p. 8): “how do people on the ‘front-lines’ of climate change want their stories to be told?” Continuing the work by Lagi and Armstrong (2017), the integration of social and emotional learning with traditional knowledge will be key to co-creating stories of resilience and adaptation and producing them

as accessible resources to inspire the envisioning of a better future. In these ways, we hope to make a small but meaningful contribution to expanding the notion of climate justice for children across global divides.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.


DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

ETHICAL APPROVAL

Full ethical approval for the project was gained from the University of Central Lancashire's Ethics Panel.

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ENDNOTES

¹ However, in 2020, funds from the Green Climate Fund were secured for an agrophotovoltaic intervention on the island to provide solutions to problems of energy supply and land use (see <https://www.greenclimate.fund/project/sap016>).

² Additional activities not detailed in this article included: (1) An activity inspired by COP27 (November 2022), which invited children to discuss what they would like the summit to achieve, and what they would ask politicians to commit to. (2) We recruited a “friendly scientist” working at our UK university, who agreed to answer questions about the climate emergency raised by both sets of children. (3) UK children handwrote individual letters which were posted to the Fijian children, and handwritten replies were received via email scans. (4) The superhero characters were developed into stories by the UK children. Analysis and presentation of these will be undertaken when stories have been co-created with storytellers in the Fijian setting.

³ F = Fijian pupil; UK = UK pupil.

⁴ In a separate project, when asking children from a different class at the same school what they thought was the link between eating meat and the environment, they too were at a loss to provide an answer.

REFERENCES

- Baldacchino, A. (2018). Early childhood education in small island states: A very British story [Doctoral dissertation, University of Sheffield]. White Rose eTheses Online. <https://etheses.whiterose.ac.uk/23004>
- Barnett, J. (2020). Climate change and food security in the Pacific Islands. In J. Connell & K. Lowitt (Eds.), *Food security in small island states* (pp. 25–38). Singapore: Springer. https://doi.org/10.1007/978-981-13-8256-7_2
- Barratt Hacking, E., Cutter-Mackenzie, A., & Barratt, R. (2013). Children as active researchers: The potential of environmental education research involving children. In R. Stevenson, A. Wals, M. Brody, & J. Dillon (Eds.), *The handbook of research on environmental education* (pp. 438–458). American Educational Research Association/Routledge.
- BBC News. (2019, October 7). Summer heatwave ‘death spike’ seen in the UK. Retrieved October 15, 2023, from <https://www.bbc.co.uk/news/health-49958201>
- Bendell, J. (2018, July 27). Deep adaptation: A map for navigating climate tragedy. Retrieved September 20, 2023, from www.iflas.info
- Berry, H. (2018). Focus on climate change and mental health. *Nature Climate Change*, 8(4), 259–259. <https://doi.org/10.1038/s41558-018-0128-7>
- Blanchet-Cohen, N., & Reilly, R. C. (2017). Immigrant children promoting environmental care: Enhancing learning, agency and integration through culturally-responsive environmental education. *Environmental Education Research*, 23(4), 553–572. <https://doi.org/10.1080/13504622.2016.1153046>
- Bridle, J. (2018). *New dark age: Technology and the end of the future*. Verso Books.
- Brown, K., Adger, W. N., Devine-Wright, P., Anderies, J. M., Barr, S., Bousquet, F., Butler, C., Evans, L., Marshall, N., & Quinn, T. (2019). Empathy, place and identity interactions for sustainability. *Global Environmental Change*, 56, 11–17. <https://doi.org/10.1016/j.gloenvcha.2019.03.003>
- Brown, N. (2022, July 7). Seven reasons why meat is bad for the environment. Retrieved September 15, 2023, from <https://www.greenpeace.org.uk/news/why-meat-is-bad-for-the-environment/>
- Brownlee, M., Powell, R. B., & Hallo, J. C. (2013). A review of the foundational processes that influence beliefs in climate change: Opportunities for environmental education research. *Environmental Education Research*, 19(1), 1–20. <https://doi.org/10.1080/13504622.2012.683389>
- Campbell, J., & Barnett, J. (2010). *Climate change and small island states: Power, knowledge and the South Pacific*. London: Routledge. <https://doi.org/10.4324/9781849774895>
- Chatzifotiou, A. (2006). Environmental education, national curriculum and primary school teachers. Findings of a research study in England and possible implications upon education for sustainable development. *The Curriculum Journal*, 17(4), 367–381. <https://doi.org/10.1080/09585170601072478>
- Clayton, S., Manning, C. M., Krygsman, K., & Speiser, M. (2017). *Mental health and our changing climate: Impacts, implications, and guidance*. American Psychological Association, and ecoAmerica.
- Cooper, P., & Jacobs, B. (2011). *From inclusion to engagement: Helping students engage with schooling through policy and practice*. John Wiley.
- Crandon, T. J., Scott, J. G., Charlson, F. J., & Thomas, H. J. (2022). A social-ecological perspective on climate anxiety in children and adolescents. *Nature Climate Change*, 12, 123–131. <https://doi.org/10.1038/s41558-021-01251-y>
- Crate, S., Ulrich, M., Habeck, J. O., Desyatkin, A. R., Desyatkin, R. V., Fedorov, A. N., Tetsuya, H., Iijima, Y., Ksenofontov, S., Mészáros, C., & Takakura, H. (2017). Permafrost livelihoods: A transdisciplinary review and analysis of

- thermokarst-based systems of indigenous land use. *Anthropocene*, 18, 89–104. <https://doi.org/10.1016/j.ancene.2017.08.001>
- Cutter-Mackenzie, A., & Rousell, D. (2019). Education for what? Shaping the field of climate change education with children and young people as co-researchers. *Children's Geographies*, 17(1), 90–104. <https://doi.org/10.1080/14733285.2018.1467556>
- Department for Education. (2022). Sustainability and climate change: A strategy for the education and children's services systems.
- Dewey, J. (1916). *Democracy and education*. The McMillan Company.
- Dewey, J. (1958). *Experience and nature*. Dover. (Original work published 1929)
- Dunlop, L., Atkinson, L., Edward Stubbs, J., & Turkenburg-van Diepen, M. (2021). The role of schools and teachers in nurturing and responding to climate crisis activism. *Children's Geographies*, 19(3), 291–299. <https://doi.org/10.1080/14733285.2020.1828827>
- Eisenberg, N. (1988). Empathy and sympathy: A brief review of the concepts and empirical literature. *Anthrozoös*, 2(1), 15–17. <https://doi.org/10.2752/089279389787058226>
- Freire, P. (1970). *Pedagogy of the oppressed*. Continuum.
- Georgakopoulou, A. (2007). *Small stories*. John Benjamins Publishing Company.
- Gibbons, E. (2014). Climate change, children's rights, and the pursuit of intergenerational climate justice. *Health and Human Rights Journal*, 16(1), 19. PMID: 25474607
- Hart, R. A. (1992). *Children's participation: From tokenism to citizenship*. UNICEF International Child Development Centre.
- Hickman, C. (2019, September 15). I'm a psychotherapist – here's what I've learned from listening to children talk about climate change. Retrieved September 15, 2023, from [I'm a psychotherapist – here's what I've learned from listening to children talk about climate change \(theconversation.com\)](https://www.theconversation.com/children-talk-about-climate-change)
- Hickman, C., Marks, E., Pihkal, P., Clayton, S., Lewandowski, R. E., Mayall, E. E., Wray, B., Mellor, C., & van Susteren, L. (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: A global survey. *The Lancet Planetary Health*, 5(12), 863–873. [https://doi.org/10.1016/S2542-5196\(21\)00278-3](https://doi.org/10.1016/S2542-5196(21)00278-3)
- Independent. (2021, September 10). Computers worse for the environment than plan travel. Retrieved September 15, 2023, from <https://www.independent.co.uk/climate-change/ict-computers-climate-change-carbon-footprint-b1917767.html>
- IPCC. (2021). *Climate change 2021: The physical science basis. Contribution of working group I to the sixth assessment report of the intergovernmental panel on climate change*. Cambridge University Press. <https://doi.org/10.1017/9781009157896>
- Janif, S. Z., Nunn, P. D., Geraghty, P., Aalbersberg, W., Thomas, F. R., & Camailakeba, M. (2016). Value of traditional oral narratives in building climate-change resilience: Insights from rural communities in Fiji. *Ecology and Society*, 21(2), 7. <https://doi.org/10.5751/ES-08100-210207>
- Jarvis, C., & Gouthro, P. (Eds.). (2019). *Professional education with fictional media: Imagination for engagement and empathy*. Palgrave Macmillan.
- Kagawa, F., & Selby, D. (2010). *Education and climate change: Living and learning in interesting times*. Routledge.
- Kahan, D. M., Peters, E., Wittlin, M., Slovic, P., Ouellette, L., Larrimore, L., Braman, D., & Mandel, G. (2012). The polarizing impact of science literacy and numeracy on perceived climate change risks. *Nature Climate Change*, 23(2), 732–735. <https://ssrn.com/abstract=2193133>. <https://doi.org/10.1038/nclimate1547>
- Lagi, R., & Armstrong, D. (2017). The integration of social and emotional learning and traditional knowledge approaches to learning and education in the Pacific. In E. Frydenberg, A. Martin, & R. Collie (Eds.), *Social and emotional learning in Australia and the Asia-Pacific* (pp. 253–271). Springer. https://doi.org/10.1007/978-981-10-3394-0_14
- Lancashire County Council. (2023, August 1). Preston District. Retrieved September 15, 2023, from Local Authority profiles – Preston District. [Preston district - Lancashire County Council](https://www.preston.gov.uk/)
- Larkins, C., & Satchwell, C. (2023). Learning how to know together: Using Barthes and Aristotle to turn from 'training' to 'collaborative learning' in participatory research with children and young people. *International Journal of Qualitative Methods*, 22. <https://doi.org/10.1177/16094069231164607>
- Lawson, D. F., Stevenson, K. T., Nils Peterson, M., Carrier, S. J., Strnad, R. L., & Seekamp, E. (2019). Children can foster climate change concern among their parents. *Nature Climate Change*, 9, 458–462. <https://doi.org/10.1038/s41558-019-0463-3>
- Lombardi, D., & Sinatra, G. M. (2010). College students' perceptions about the plausibility of human induced climate change. *Research in Science Education*, 42(2), 53–66. <https://doi.org/10.1007/s11165-010-9196-z>
- Luetz, J. M., & Nunn, P. D. (2020). Climate change adaptation in the Pacific Islands: A review of faith-engaged approaches and opportunities. In W. Leal Filho (Ed.), *Managing climate change adaptation in the Pacific region*. Springer. https://doi.org/10.1007/978-3-030-40552-6_15
- Lundy, L. (2007). 'Voice' is not enough: Conceptualising Article 12 of the United Nations Convention on the Rights of the Child. *British Educational Research Journal*, 33(6), 927–942. <https://doi.org/10.1080/01411920701657033>
- Met Office. (2020). Climate change in the UK. Retrieved September 15, 2023, from <https://www.metoffice.gov.uk/weather/climate-change/climate-change-in-the-uk>
- Moezzi, M., Janda, K., & Rotmann, S. (2017). Narratives and storytelling in energy and climate change research. *Energy Research and Social Science*, 31, 1–10. <https://doi.org/10.1016/j.erss.2017.06.034>
- Monroe, M. C., Plate, R. R., Oxarart, A., Bowers, A., & Chaves, W. A. (2019). Identifying effective climate change education strategies: A systematic review of the research. *Environmental Education Research*, 25(6), 791–812. <https://doi.org/10.1080/13504622.2017.1360842>
- Morris, B. S., Chrysochou, P., Christensen, J. D., Orquin, J. L., Barazza, J., Zak, P. J., & Mitkidis, P. (2019). Stories vs. facts: Triggering emotion and action-taking on climate change. *Climatic Change*, 154, 19–36. <https://doi.org/10.1007/s10584-019-02425-6>
- Nordstrom, S. (2008). Fragility and natural resources. Retrieved September 15, 2023, from [Fragility and Natural Resources - GSDRC](https://www.gsdrc.org/publications/2008/01/fragility-and-natural-resources/)
- Norgaard, K. M. (2011). *Living in denial: Climate change, emotions, and everyday life*. MIT Press.
- Nunn, P. D., Mulgrew, K., Scott-Parker, B., Hine, D., Marks, A. D. G., Maher, D., & Maebuta, J. (2016). Spirituality and attitudes towards nature in the Pacific Islands: Insights for enabling climate-change adaptation. *Climatic Change*, 136, 477–493. <https://doi.org/10.1007/s10584-016-1646-9>
- Oatley, K., & Djikic, M. (2018). The psychology of narrative art. *Review of General Psychology*, 22(2), 161–168. <https://doi.org/10.1037/gpr0000113>
- Öhman, J., & Öhman, M. (2013). Participatory approach in practice: An analysis of student discussions about climate change. *Environmental Education Research*, 19(3), 324–341. <https://doi.org/10.1080/13504622.2012.695012>
- Osberg, D., & Biesta, G. (2008). The emergent curriculum: Navigating a complex course between unguided learning and planned enculturation. *Journal of Curriculum Studies*, 40(3), 313–328. <https://doi.org/10.1080/00220270701610746>
- Peredo Beltrán, E. (2014). Cognitive dissonance: Why are we so complacent in the face of climate change? <https://www.rosalux.de/news/id/8527/climate-change-and-cognitive-dissonance>

- Pettit, J. (2004). Climate justice: A new social movement for atmospheric rights. *Climate Change and Development*, 35(3), 102–106. <https://doi.org/10.1111/j.1759-5436.2004.tb00142.x>
- Prasad, R. R., & Mkumbachi, R. L. (2021). University students' perceptions of climate change: The case study of the University of the South Pacific-Fiji Islands. *International Journal of Climate Change Strategies and Management*, 13(4–5), 416–434. <https://doi.org/10.1108/IJCCSM-12-2020-0126>
- Rousell, D., & Cutter-Mackenzie-Knowles, A. (2019). A systematic review of climate change education: Giving children and young people a 'voice' and a 'hand' in redressing climate change. *Children's Geographies*, 18(2), 191–208. <https://doi.org/10.1080/14733285.2019.1614532>
- Satchwell, C. (2013). "Carbon literacy practices": Textual footprints between school and home in children's construction of knowledge about climate change. *Local Environment: the International Journal of Justice and Sustainability*, 18(3), 289–304. <https://doi.org/10.1080/13549839.2012.688735>
- Satchwell, C. (2016). Agents of change? Creating meaningful opportunities for children to engage with climate change education. In K. Winograd (Ed.), *Environmental education in times of crisis: Children as agents of change in nature and in community*. Routledge.
- Satchwell, C. (2019). Fictionalised stories co-produced with disadvantaged children and young people: uses with professionals. In C. Jarvis & P. Gouthro (Eds.), *Professional education with fiction media. Imagination, engagement and empathy in learning*. Palgrave Macmillan.
- Satchwell, C., Larkins, C., Davidge, G., & Carter, B. (2020). Stories as findings in collaborative research: Making meaning through fictional writing with disadvantaged young people. *Qualitative Research*, 20(6), 874–891. <https://doi.org/10.1177/1468794120904892>
- Sheehan, K., Dahmen, N., & Morris, D. L. (2019). Fire, ice or drought? Picturing humanity in climate change imagery. In J. Fessmann (Ed.), *Strategic climate change communications: Effective approaches to fighting climate denial*. Vernon Press.
- Shier, H. (2001). Pathways to participation: Openings, opportunities and obligations. *Children & Society*, 15, 107–117. <https://doi.org/10.1002/chi.617>
- Sou, G. (2023). Communicating climate change with comics: Life beyond apocalyptic imaginaries. *Geographical Research*, 1–13, 320–332. <https://doi.org/10.1111/1745-5871.12592>
- Stapleton, S. R. (2015). Environmental identity development through social interactions, action, and recognition. *The Journal of Environmental Education*, 46(2), 94–113. <https://doi.org/10.1080/00958964.2014.1000813>
- Stapleton, S. R. (2019). A case for climate justice education: American youth connecting to intragenerational climate injustice in Bangladesh. *Environmental Education Research*, 25(5), 732–750. <https://doi.org/10.1080/13504622.2018.1472220>
- Tagg, N., & Jafry, T. (2018). Engaging young children with climate change and climate justice. *Research for all*, 2(1), 34–42. <https://doi.org/10.18546/RFA.02.1.04>
- Teach the Future. (2021). Policy Documents. Retrieved September 15, 2023, from [Teach the Future's Policy Documents](https://teachthefuture.org/policy-documents)
- Tyler, S., & Moench, M. (2012). A framework for urban climate resilience. *Climate and Development*, 4(4), 311–326. <https://doi.org/10.1080/17565529.2012.745389>
- Urry, J. (2005). The complexity turn. *Theory, Culture and Society*, 22(5), 1–14. <https://doi.org/10.1177/0263276405057188>
- Verlie, B. (2019). Bearing worlds: Learning to live-with climate change. *Environmental Education Research*, 25(5), 751–766. <https://doi.org/10.1080/13504622.2019.1637823>
- Verlie, B. (2021). *Learning to live with climate change: From anxiety to transformation*. Routledge. <https://doi.org/10.4324/9780367441265>
- White, J. (2020). The climate emergency and the transformed school. *Journal of Philosophy of Education*, 54(4), 867–873. <https://doi.org/10.1111/1467-9752.12461>
- Wolf, J., & Moser, S. (2011). Individual understandings, perceptions, and engagement with climate change: Insights from in-depth studies across the world. *WIREs Climate Change*, 2, 547–569. <https://doi.org/10.1002/wcc.120>

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