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RESEARCH ARTICLE



# 'It's beautiful, living without fear that the world will end soon' – digital storytelling, climate futures, and young people in the UK and Ireland

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## ABSTRACT

This research explores two questions: how do young people imagine futures shaped by climate change and our collective response to the climate crisis, and what is the impact on young people of creatively engaging with the future? The participatory action research method of digital storytelling was adapted to explore climate futures, with thematic, visual and narrative analysis of the resulting videos. Young people articulated positive, negative and more complicated visions of the future, including counterfactuals, discontinuities, and living with loss and change. They also described a process of positive reappraisal over the course of the speculative digital storytelling workshops, with emotions about the future shifting from being predominantly negative to a more balanced spectrum including acceptance, curiosity and hope.

## ARTICLE HISTORY

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## KEYWORDS

Climate change; digital storytelling; futures; youth

## Connection

*Hey, it's you, or me. Same thing. This might confuse you, but I'm you from the future. I'm writing this from 2050. Things have changed so quickly.*<sup>1</sup>

In September 2019, an estimated six million people participated in the Fridays for Future climate strikes around the world (Taylor, Watts, and Bartlett 2019). In London, where the author joined the strikers with his children, a sea of protesters gathered near the Houses of Parliament. Young people and their supporters demanded climate action through homemade signs: 'There is no planet B', 'You'll die of old age, we'll die of climate change', 'My future is in your hands'.

In an early review of research on the school climate strikers, Bowman reflected on the imagination of young people as they look into an uncertain future: 'Climate action is more than protest: it is also a world-building project, and creative methodologies can aid researchers and young climate activists as we imagine, together, worlds of the future' (2019, 296). This research picks up on that call, collaborating with young people to explore their hopes and fears for the future through digital storytelling. This research also responds to interest in the fields of Children's Geographies and Childhood Studies in the everyday climate activism of young people, which is shaped by their perceptions of the future (Skovdal and Benwell 2021; Spyrou, Theodorou, and Christou 2022).

Building on the traditions of participatory action research and more recent developments in narrative, visual and digital analysis, this article explores two interconnected research questions:

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- How do young people in the UK and Ireland that are engaged with climate activism imagine futures shaped by climate change and our collective response to the climate crisis?
- What is the impact on young climate activists of creatively engaging with the future?

These questions are particularly relevant to climate educators interested in helping young people develop both resilience amid change and the skills to shape the future. Speculative digital storytelling is a novel participatory research method and promising environmental education practice, with the potential to offer new insights into youth perspectives on climate change while supporting young people's positive reappraisal of environmental problems.

## Context

*Should I tell you what the world will be like 30 years from now? Well, it can go in two ways.*

### Imagining climate futures

Futures are of interest across the social sciences. Mische (2009) called for a 'sociology of the future', arguing that cultural sociologists should pay as much attention to future projections as they do to collective memories. In science and technology studies, Jasanoff defined sociotechnical imaginaries as: 'collectively held, institutionally stabilised, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology' (2015, 4). Levy and Spicer (2013) identified four different climate imaginaries: fossil fuels forever, climate apocalypse, techno-market and sustainable lifestyles. Milkoreit extended this thinking into the concept of socio-climatic imaginaries, which incorporate both social and natural systems, as well as undesirable and mixed possible futures (2017). At the level of individuals and human psychology, Andrews described the combination of imagination and narrative as, 'a bridge traversing the pathway between what is known, and what can be known, between the present and possible futures' (2014, 5).

Futures thinking also has practical applications. In Japan, a Future Design movement has emerged in which people represent imaginary future generations in planning discussions, with the aim of 'activating a human trait called *futurability*, where people experience an increase in happiness because of deciding and acting to forego current benefits in order to enrich future generations' (Saijo 2020, 2). In Wales, the Well-being of Future Generations Act of 2015 established a Future Generations Commissioner to advise government bodies on sustainable development and the long-term impacts of their decisions (National Assembly for Wales 2015). The Swedish Narrating Climate Futures initiative, which is part of the Climaginations network, created *The Museum of Carbon Ruins*, an immersive, speculative exhibition presenting a post-carbon 2053 (Raven and Strippel 2020). Reflecting on a collaboration between artists and academics exploring climate futures in Spain and Portugal, Galafassi et al. concluded, 'visioning then is not something one does once and for all (as in forming an image), but rather it is a continuous process of making the future present in order to discover preferences towards certain futures and taking actions in the present towards an evolving purpose' (2018, 8).

Environmental and sustainability educators have long argued for developing futures literacies, with Hicks and Holden contending, 'probable and preferable futures, scenarios, envisioning, can fruitfully be employed in the classroom to help students develop a futures perspective' (2007, 509). Examples of creative engagement with climate futures include digital storytelling (Cunsolo Willox, Harper, and Edge 2013), participatory video (Haynes and Tanner 2015; Littrell et al. 2020; Walsh and Cordero 2019), photovoice (McKenzie and Bieler 2016; Trott 2019) and speculative fiction (Doyle 2020; Rudd, Horry, and Lyle Skains 2020). With respect to these 'inventive methodologies', Coleman has argued that, 'a sensory sociology of the future might be interested not only

in *documenting* orientations or imaginations of the future, but also in *probing, provoking, stimulating* them' (2017, 539).

Climate and other environmental campaigners have been characterised as using apocalyptic imagery to motivate action, reflecting a form of future-oriented pessimism (Cassegård and Thörn 2018). Amid debates about the effectiveness of positive versus negative rhetoric, a new form of post-apocalyptic environmentalism has emerged – represented by Extinction Rebellion, Deep Adaptation and the Dark Mountain Project – that anticipates a future characterised by irreversible and unavoidable loss (Cassegård and Thörn 2018; Moor 2021; Friberg 2021).

Recent research has also found high levels of climate anxiety among young people, with students rating negative climate scenarios as more likely than positive climate scenarios (Finnegan 2022; Hickman et al. 2021). Advocating for participatory methods and arts-based engagement with young people on climate, Trott commented, 'the arts can support critical reflection and creative expression, allowing young people to envision alternative and preferable futures and how to get there (i.e. helping us to imagine "what if?")' (Trott 2021). Verlie takes the power of story a step further in terms of how we can learn to live with climate change: 'We need stories that enable us to identify as *part of* climate change, and that enable us to stay with the ethical and interpersonal challenges of *living with it*' (2022, 104).

### Digital storytelling in research

Digital storytelling, as reflected in the International Digital Storytelling Conference, is rooted in the community arts work of the American charity StoryCenter (StoryCenter n.d.). This model of storytelling involves a facilitated workshop in which people without any filmmaking experience produce short, first-person, multimedia narratives. Digital storytelling has been adopted in a variety of educational, organisational, and developmental contexts, including the Patient Voices programme in the UK (Hardy and Sumner 2018).

A systematic review of digital storytelling in research confirmed its contribution as a participatory, sensory, visual research method, especially as the visceral nature of multimedia stories 'capture sensory data not accessible via written word or interview' (Jager et al. 2017, 2574). Hogan and Pink argue that visual methodologies involving creative expression are also a means of accessing the interior world of affect, or interiority, through a 'paradigm that views inner states as being in progress, rather than ever static' (2012, 233). After leading a digital storytelling project that shared the voices of older people in rural England living more sustainably, Gearty concluded, 'narrative and storytelling can play an important role in both action research and action learning by helping individuals not only learn through the telling of their own stories but also through their engagement in the stories of others' (2015, 160).

### Narrative and visual turns

This research project builds on *turns* in social science towards narrative and visual analysis. While the visual research methods explored by Rose primarily relate to found images and visual culture rather than research that involves the production of visual material by research subjects, her criteria for critical visual methodologies are useful reference points: 'one that thinks about the agency of the image, considers the social practices and effects of its viewing, and reflects on the specificity of that viewing by various audiences, including the academic critic' (2016, 17).

With narrative analysis, Riessman (2008) argues that we are able to better understand the structure of stories and intention of storytellers by treating an entire narrative as an analytical unit, rather than coding small excerpts of text (or transcripts) out of context. Reflecting on the combination of narrative and visual turns in human sciences, Riessman commented, 'the power of the camera is turned over to research participants to record images they choose, and to story their meanings collaboratively with investigators' (2008, 143).

Participatory visual methods allow research subjects to express multiple and ambiguous narratives related to identity (Ní Ní Laoire 2016). Digital storytelling has also been described as a 'more-than-visual' method: 'Rather than focusing on the image as data, more-than-visual methods take visual production as a situated, material, and embodied practice' (Marshall, Smaira, and Staeheli 2022). As such, digital storytelling methods provide insights through both the production process and resulting stories into the provenance, properties, meanings and affordances of multimedia data.

## Methodology

Forty-seven secondary school students in the United Kingdom and Republic of Ireland produced digital stories through this research project. The students attended upper secondary school and were between 15 and 18 years old. Participants were primarily recruited through the UK and Irish Schools Sustainability Networks, which emerged in 2020 to support teachers and students engaged in school sustainability activities after the youth climate strikes. The researcher also conducted workshops with small groups of students at two schools in London, two schools in Berkshire, and a museum in Oxford. Twenty-eight of the students attended independent schools, eighteen attended state schools, and one was home-schooled. Demographic information was not collected during the workshops. The researcher observed that approximately two-thirds of the participants were female and one-quarter were from ethnic minorities (excluding white minorities), while recognising that there are limitations to observed aspects of identity. The research was approved by the Central University Research Ethics Committee (CUREC) at the University of Oxford, with reference number SOGE20201A-178.

In advance of the research, the researcher participated in StoryCenter's certification programme for facilitators. Digital storytelling workshop materials were adapted to include information about climate science, climate change communication, and future scenarios (Climate Lab Book [n.d.](#), Climate Outreach 2020, Great Transition Initiative [n.d.](#)). As a vehicle for first-person, multimedia expression, digital storytelling tends to be a reflective process, in which the storyteller identifies and explores 'the moment of change that best represents the insight they wish to convey' (Lambert and Brooke Hessler 2020, 71). In this research, storytelling was speculative rather than reflective, with the participants encouraged to envision the world in the year 2050 and write a letter from their future self to the current self. These *letters from the future* were shared within each group of storytellers, and then recorded as narration for their videos.

The facilitated digital storytelling workshops were delivered by the researcher both in-person (25% of stories) and online (75% of stories) due to COVID-19 restrictions. The two-day in-person workshop was adapted into a series of virtual sessions, which were conducted during school lunch breaks, after-school, and at the weekend. The researcher obtained an educational licence for the browser-based software WeVideo, which the participants used to edit their videos. Each workshop concluded with a screening of the participants' digital stories and a focus group conversation. At the end of the workshop, participants also revisited informed consent, especially with respect to how they wanted to share their digital stories (do not share, share anonymously, share with attribution). For consistency, all stories are referred to below using an anonymous code from DS01 to DS47 and focus group conversations use a code W1 to W8 for each series of workshops.

The 47 digital stories are the primary data generated during this research. The narration was transcribed and the researcher also created a list of the visuals used in each video, with notes about music and editing style. The focus group conversations were also recorded and transcribed. Eleven videos were used in public engagement activities connected to COP26, and creators of these digital stories each wrote a short filmmaker statement, which are considered supplemental data. These files were coded in NVivo for reflexive thematic analysis, in terms of themes identified in both the audio and visuals of the stories, and narrative analysis of the structure of each story (Braun and Clarke 2006; Riessman 2008).

There are methodological limitations to this study. Given the substantial time investment required to participate in the workshop, the students were self-selecting and primarily motivated by an interest in climate and storytelling. As there were a small number of participants, and independent schools were overrepresented, the participants are not representative of young people in the UK and Ireland. Demographic data wasn't systematically captured about participants, limiting any comparisons based on gender, ethnicity or other factors. As the workshops took place during COVID-19 regulations, they were delivered through a hybrid in-person and online format, which meant the digital storytelling workshops varied in format for different groups of participants. Online sessions also limited opportunities for strengthening the relationship between researcher and research subjects, or gathering data through participant observation.

The digital stories are available online at <http://tinyurl.com/lettersfrom2050>. An animation based on the digital stories is available at <https://vimeo.com/tamarackmedia/2050>.

## Change

*It is up to you how much light there will be in the dark, and what remains as an anchor of positivity, hope and joy.*

## Results

The digital stories created by the research participants ranged in length from one minute and seven seconds to four minutes and 22 s. While most of the videos followed the format of a letter from the year 2050, a handful departed from the initial prompt: two students wrote poems as the narration, one student wrote a letter from the present to the future, one student produced a video without any narration, and one student wrote a personal reflection on a local rewilding project that involved the failed reintroduction of beavers.

The digital stories utilised a range of visual materials, including stock footage and photographs, original footage and photographs created by the participants, illustrations and text. The majority of videos primarily used stock footage that was included with the WeVideo editing software. While much use of the stock footage was *show-and-tell*, directly illustrating the text of the script, the



**Figure 1.** Still frame of the digital story DS08.



filmmakers also used visual metaphors, with repeated images of sunrise, sunset, clouds, and flying birds. Ten videos were completely composed of original footage, including a story with a single long shot of Brighton Pier with natural sound (Figure 1), which the filmmaker explained in her filmmaker statement.

When given the brief I instantly thought of the sea and the beach as this is the place where I feel most connected to nature and where I often reflect. At the start I found the process rather overwhelming and daunting, thinking about the future in this way, and I took more of a pessimistic approach. However, as the project went on, I decided to change my stance and focus on the way we have adapted and that it isn't as bad as I may have imagined (DS08).

A small number of digital stories, all created by female storytellers, included personal images, especially at the beginning and end of their videos. These were accompanied with more personalised, emotional messages from the future self to the current self. 'Make sure to look after yourself, love yourself, and keep making changes, no matter how small, so you'll be able to appreciate the world as much as I am now. I love you baby girl' (DS20).

The pacing of the editing varied greatly, with some videos composed of a small number of still images and video clips held on screen for a number of seconds, and other stories including fast-paced sequences where visuals only remained onscreen for a fraction of a second. Videos also included layering effects, in which more than one image appeared onscreen at the same time, for example to juxtapose imagery of the causes and impacts of climate change. Filmmakers also layered text over visuals to reinforce key ideas from their narration.

Twenty of the videos had no music, with the other twenty-seven primarily using stock music available through WeVideo. The music tended to be fairly dramatic, although some videos had a more contemplative soundtrack. A small number of videos included a music transition to reflect a change in content and tone.

After a close reading of the digital story transcripts and repeated viewings of the visual material of each story, twelve themes were identified (Table 1). Looking at an entire digital story as a cohesive narrative, rather than breaking the transcript and visuals into smaller units for coding and analysis, revealed patterns in terms of story structure and style. Based on this narrative analysis, nine different types of narratives were identified in the digital stories (Table 2).

Through their writing and use of visuals, the storytellers presented positive, negative and nuanced visions of the future. There were narratives of destruction and decline, even collapse; dystopias illustrated with scenes of pollution, extreme weather, flooding, and fires; stories of loss and solastalgia. The students also created narratives of progress towards green utopias with visuals of green technology – wind turbines, solar panels – and discussions of new forms of transport, agriculture, and architecture. In some cases, the positive narratives reflect a new consciousness of harmony with nature, and an intersectional approach to social and environmental problems.

The participants also presented more complicated visions of the future using a variety of narrative strategies. Counterfactuals included both positive and negative futures, juxtaposing what *could have* happened between now and 2050 with what *did* happen, or contrasting present day hopes and fears with the lived experience of a future self. Stories of discontinuities – future events that mark a break between current and future trends – explain the transition between a worsening short-term and a longer-term 'period of repair, of restoration, of rebuilding' (DS44). Stories also present a form of 'staying with the trouble' (Haraway 2016), in which young people are clear eyed about loss and injustice, while articulating narratives of adaptation, resilience, and appreciation for the natural world.

Most of the digital stories included visual and script references to climate protests, a tangible form of climate action for students, especially with respect to the Fridays for Future school climate strikes. Individual climate actions were presented as a path to collective action and systems change, although young people didn't express much faith in politicians and governments taking necessary

**Table 1.** Themes identified during reflexive thematic analysis.

Theme	Description	Example(s)
Biophilic design	Many stories described a future in which people lived in harmony with nature, urban areas had been rewilded, and architecture reflected biophilic design (Kellert and Finnegan 2011). Imagery of the Supertree vertical gardens in Singapore appeared in multiple videos (Gardens by the Bay n.d.).	'Humans and nature have begun to live in harmony, with vines and trees growing magnificently, and urban life moving with them, instead of just destroying them, like in the past' (DS42).
Education	When describing climate solutions, many storytellers referenced the importance of education. In addition to environmental and sustainability education, access to education for girls was seen as an important response to climate change.	'Schools also now teach future generations how to look after the Earth and how to be mindful of everything they do and how it will affect the world' (DS46). 'Children are being educated about their upcoming responsibilities' (DS43).
Gratitude	A number of videos used natural imagery combined with narration expressing their gratitude for the natural world, or specific natural places and activities.	'Please always remember to look up around you, embrace the fresh air, the smell of flowers, the snow in the winter, appreciate the clean beaches, the warm summers, and the trees around you. Because this is what you are fighting for' (DS25).
Green technology	Most of the digital stories also included some representation of green technology, primarily reflected through solar photovoltaic panels and wind turbines. Some videos also mentioned changes in transportation, including self-driving electric cars, and skyline shuttle pods controlled by apps.	'Now we have the ability to rely almost exclusively on renewable, clean energy, having invested enough in solar, wind, and other crucial sources of renewable energy' (DS06).
Individual/systems change	Many of the videos describe changes in patterns of behaviour, such as more plant-based diets, an end to fast fashion, and plastic-free shops. These individual actions were described as pathways to collective action, and also referenced as part of messages of encouragement.	'It all starts from the baby steps, the union of society, of everyone making their contribution' (DS41). 'So all the small actions that you're taking now, although they may seem insignificant at the moment, they'll play a major role in saving our planet' (DS46).
(In)equality	Many videos referenced inequality and social justice, reflecting an intersectional approach to social and environmental issues. Some stories painted a picture of increasing inequality, while other stories reflected decreases in inequality.	'In 2050 you will see the rich retreating into air-conditioned sanctums behind ever-higher walls and the poor left exposed to the ever harsher elements' (DS06). 'The unnecessary suffering has been avoided by no longer prioritising the rich and wealthy but focusing on making sure no one has too little, no one has too much' (DS42).
Government (in)action	Governments and the political process were mainly seen as obstacles to addressing the climate crisis. Some videos referenced the success of the Green Party and local government action, while others emphasise international cooperation.	'Politicians did nothing to stop climate change' (DS07). 'The fake promises governments made to act on climate change are now more than visible and the consequences can be seen globally' (DS33). 'The people you trusted to fix it failed' (DS34).
Loss and damage	Borrowing the language of the UNFCCC, most of the letters include references to and visual representations of loss and damage – hurricanes, flooding, forest fires, drought – and the resulting human suffering.	'I'm talking about droughts and floods that seem to be as often in the news, as COVID-19 is in your life right now' (DS37). 'The world is ablaze ... The world has been lit with damage' (DS30).
Pollution	A number of specific stock footage clips of smokestacks and powerplants were repeated, as well as smog-filled cityscapes, with references to poor air quality. The storytellers also frequently mentioned the face masks worn during COVID-19 as a regular part of life in the future due to poor air quality. There also were many references, in both visuals and scripts, to polluted waterways and plastic in the ocean.	'The unbearable air, reeking of industrial dirt and acting as glue by making my lungs sticky and ineffective' (DS37).
Protest	Another stock footage clip that appeared in most of the videos was of climate change protesters holding handmade signs. One story included a photo of the filmmaker at a school climate strike.	'After an incredible amount of protests and education, the world took it seriously' (DS45).
Refugees	A number of digital stories described climate migration as a means of exploring both global climate injustices and potential xenophobic reactions to refugees.	'At the same time, sitting in front of our borders and waiting to be let in are millions of refugees. Refugees, because of the unbearable and destructive climate in their home countries. Refugees, because the air is even hotter, drier and

*(Continued)*



Table 1. Continued.

Theme	Description	Example(s)
Solastalgia	Many videos referenced destruction of the natural world and the sense of loss due to environmental change, which echoes the concept of solastalgia (Albrecht et al. 2007). Solastalgia implies a connection to place, and the feeling of loss when that place changes.	harder to inhale in the countries they escaped. Refugees, because we, society as a whole, didn't seem to care enough' (DS25). 'I am still based in England, but it is not the same place that I once loved' (DS01). 'I don't mind where I live, but the world feels cold; nowhere feels like home' (DS12).

action unless under great pressure from civil society. Storytellers also presented their participation in climate action now and in the future as a means of ensuring they can live without regret, even as the climate crisis continues to unfold.

The filmmaker statements provided additional insights into the participants' motivations and creative process. One storyteller initially drafted a letter that went into great detail about a negative future, but, when it came time to create a video, he abandoned the original letter and went to film in a local natural area (Figure 2). The resulting digital story reflected the theme of solastalgia and narrative of memory, and storytelling intent was captured in the filmmaker statement:

During my time filming, I thought showing the potential effects of global warming in an extremely personal and significant place would be really impactful. I hoped that demonstrating what could happen to my favourite place might help people watching the video understand what may happen to theirs and thus enact genuine change. I also wanted to capture the beauty of the environment and what is at risk if we don't work to change our impact on the environment (DS02).

The focus group conversations at the end of each workshop, after the participants had shared their final videos, were also an opportunity to further explore filmmaker intentions and the impact of the digital storytelling process. Students expressed satisfaction with creating their digital stories:



Figure 2. Still frame of the digital story DS02.

**Table 2.** Narratives identified during narrative analysis.

Narrative	Description	Example(s)
Collapse	While many negative visions of the future are reflected in the videos, a small number described a population crash and complete collapse of civilisation.	'Few humans have survived Mother Earth's wrath, with the last remaining few wandering the polluted surface, hoping for any salvageable food or water' (DS11).
Contingency	Nearly all videos emphasised that the future was unwritten, with references to hope and calls to action often appearing at the very end of the video. This message of contingency reflects both the potential agency of the viewer/storytellers as well as their uncertainty about the future. The science fiction and time travel implications were also playfully addressed.	'Although our current situation seems helpless, there is hope ... Keep fighting' (DS35). 'Due to laws created in 2048 pertaining to the sharing of personal information in time-travelling letters, blah, blah, blah, blah, I'm not permitted to tell you how your careers, relationships and family situations pan out. Space-time continuum stuff' (DS31).
Counterfactual	Many of the videos explored multiple possible futures in a single narrative. For example, one video explicitly introduced both positive and negative visions, while another video included a hypothetical description of what <i>could have</i> happened rather than what <i>did</i> happen. Similarly, current day hopes and fears were contrasted with the imagined future.	'I can't help but wonder what could have been. Climate tipping points might have already been reached, causing catastrophic climate change and loss of biodiversity' (DS21). 'The world today is different from the one you once feared, the world you hated to imagine, and the world that filled you with hopelessness and frustration' (DS20).
(Dis)continuity	A number of the digital stories described a worsening near-term future followed by a more sustainable long-term future. A few of these transitions were described in terms of a world-changing event, a discontinuity between past and future, for example the 2034 London air pollution crisis (DS19).	'But then in 2035, it all changed. The biggest drought the world had ever seen swept the globe, populations halved, water supplies dwindled, but from the dust arose revolution' (DS05).
Enlightenment	A small number of stories describe a new consciousness of harmony between humans and the more-than-human world, reflecting a narrative arc towards enlightenment that is distinct from the utopian visions characterised by green politics and technology.	'There is a new culture of trust and empathetic understanding for one another. I look around and everyone seems healthier, happier, without these feelings of helplessness and chronic frustration towards climate change' (DS20).
Living-with	Echoing both Verlie (2022) and Haraway (2016), many of the stories reflect the ambiguity of a future where climate change resulted in substantial loss and suffering, but people also adapted individually and collectively.	'Things have changed. But we remain closer to a tipping point than feels comfortable. The precarious balance of two steps forward, one step back. It wasn't like in the films. There was never a point when you breathed a sigh of relief and decided that good had defeated evil. Too many natural wonders were lost due to our actions. Too many species whose fates have been restricted to the history books. Too many lives lost because of the greed and unbridled power of a few. It's hard to feel that we've won, as politicians like to claim. A ticking time bomb remains and there's lots of work to do' (DS44).
Memory	A number of the digital stories are memories from the future of specific places or experiences, with the storyteller including original footage and photographs of these local places of personal importance.	'Do me a favour and take a moment to think about all those long walks you go on with your family' (DS26). 'Do you remember this? It's your favourite hike ... You remember, right? That taste of fresh air you valued so much, loved so much. Well, it's gone now' (DS02).
Revenge	A few of the stories present a narrative in which the natural world exacts revenge upon humanity. These narratives tend to present a misanthropic perspective.	'The planet I live on has begun vindicating itself of the virus that is humanity' (DS11). 'Mother Nature came for us, showing us the same mercy we have shown to her, as resolute in her cause as we were to protect money over life' (DS34). 'We exist and Earth is still our home but she is broken. We made her deadly and ruthless and relentless. She was angry. She knew no boundaries and showed no mercy' (DS24).
Utopia/ Dystopia	Most of the digital stories presented either a fully positive or negative picture of the future – narratives of a world of improvement or decline. The dystopias were characterised by strong emotional language.	'I am so ashamed of what we have let our world come to' (DS01). 'Climate change has ruined my life and it will ruin yours soon too' (DS30). 'I do feel like this green, state-of-the-art utopia is all a bit in your

(Continued)

Table 2. Continued.

Narrative	Description	Example(s)
	The utopias focused on positive changes in energy, transportation, food, and architecture. One filmmaker presented a positive vision, but critiqued it.	face though ... Countries competing over who can create the most flamboyant green architecture, who can build a new <i>it</i> city, because sustainability has become the new <i>it</i> word' (DS18).

Student 1: I feel really proud. I was really excited to finally see the finished product ... Even though I sound really weird, I'm quite happy with the way that it's coming across now.

Student 2: When you write something ... you kind of visualise it in your head. And so I guess that kind of gave us the opportunity to do that. And seeing it come together, even though it was obviously not exactly the vision that I saw, it was close, and that was quite satisfying as well (W2).

In these focus groups, the storytellers also reflected on the intended impact of their videos on potential audiences. For some, the stories were an opportunity to see through their initial ideas, 'I kind of did it for myself. I didn't think about the viewer at all. I just thought about making the video' (W3). Students also spoke about storytelling as a means of cultivating empathy, 'I think I want the audience to feel empathy ... and maybe do what they can to maybe prevent any further destruction' (W4).

A couple of filmmakers, both male, spoke about how they changed from a more positive vision when they initially wrote the letter from the future to a negative depiction in their final video because they thought that would be more entertaining. Students also identified the cultural influences on their depictions of the future, 'It reminded me of apocalyptic climate films like *Snowpiercer*, where the whole world is frozen, and other fiction films, which actually could be a reality a couple years down the line' (W2). When explaining the choice of a narrative of collapse and visual metaphors of weeds growing through cracks in the pavement (Figure 3), one participant commented, 'I feel like I've sort of mentally accepted the death of civilisation. It's gonna happen, but we can keep looking out for each other.' (W1).

Students across the focus groups also spoke about the invitation to explore the future: 'We're attending loads of careers talks and things like that. A lot of "the future" is based on what you're



Figure 3. Still frame of the digital story DS39.

going to do and your goals. But you never really kind of stop and think how different the world is going to be around you when you reach that point in your life' (W4). The storytellers also reflected on the strangeness of telling a story about the future in the present. For some, this involved the memories of the future captured through present day original footage. For others, this was based on using current stock footage to illustrate future climate catastrophes. 'My piece has forest fires that happen in 2050, but it is literally just taken from now. And so it's ... kind of weird saying, oh look, this is what happens in 2050. They are actually happening now' (W7).

An exercise during the workshop involved participants choosing three words that related to how they felt about the future, which were related to the taxonomy of climate emotions described by Pihkala (2022). This happened during the initial session after exploring climate science and future scenarios, and then again during the focus group conversation at the end of the workshops. In one workshop, the main sentiment expressed changed from overwhelmed in the beginning to a combination of hopeful and ambitious at the end, which one of the participants noted in the focus group: 'I'm happy that these [hopeful and ambitious] are the two words that most people used, because it implies that there is hope, we are looking for solutions, and we are looking forward to making progress' (W2).

In one of the focus groups, students discussed how their emotional responses to a future shaped by our collective response to the climate crisis changed over the course of the digital storytelling workshop.

Student A: I was worried and frustrated before. I still am, but I think I'm more ambitious now and kind of optimistic that we can make a difference.

Student B: I agree, it's definitely made me feel more optimistic. And something I said in my letter was about me doing actions now which will mean I don't have to live with regret in the future. And that ... makes my actions now feel meaningful and worthy.

Student C: I feel like I'm at peace with what I am doing to be on the right side of history ... I have kind of accepted, especially with thinking about it a lot more over the last three weeks, what my role is within everything. And, obviously, I'll never truly accept it, but I'm definitely a lot more accepting of the facts and reality now than I was maybe a year ago when I was just filled with anger and really frustrated about it. Whereas now I think, 'why focus on those emotions when you can do other things and use your energy better'.

Student D: I'd still say that I'm worried about it. Of course, I guess most people probably are. But I also feel like if I tried to do everything that I, as one person, can do, it might spark something in people around me if they see me doing something (W3).

While the digital stories presented positive, negative and mixed socio-climatic imaginaries, including the range of themes and narratives outlined above, the reflections of the storytellers more consistently indicated a shift from a general sense of dread about the future, to a combination of worry, acceptance and curiosity. As the discussion above illustrates, engaging with the future – creatively, collectively – played a role in this shift in perspective.

## Discussion

The primary goal of this research was to explore how young people imagine futures shaped by climate change and our collective response to the climate crisis using the research method of digital storytelling.

Despite time constraints, limited tools, and no budgets, the young people proved sophisticated storytellers, effectively combining voice, music, photographs and video, and utilising editing techniques such as pacing, transitions, and layering. The digital stories reflect a number of influences, from classroom learning and personal environmental activism, to cultural references and speculative fiction, for example referencing space travel, time travel, future memories, and apocalypse. Visual metaphors – sunrise and sunset, clouds moving across the sky, birds in flight – were left

to viewers to interpret, and simultaneously communicated contemplation about the future, changes in atmospheric chemistry, and hope.

The speculative digital storytelling process and resulting stories communicate a wide variety of imagined climate futures, as illustrated by the themes and narratives identified above. This study builds on related research exploring future scenarios with young people, which found that students held mixed emotions about the future, reporting high levels of both hope and anxiety (Finnegan 2022). The digital stories add a richness to this picture, especially through the words and voices of the research participants, while similarly resisting any shared, homogenous vision of the future. Taken as a whole, the *letters from the future* capture the uncertainties, worries and possibilities young people face, especially those actively engaged in climate activism.

The negative visions expressed in many of the digital stories paint a bleak picture of the world in 2050 – stories of dystopia and collapse characterised by pollution, loss and damage, and refugees. While in some ways these visions are specific to the climate crisis, fears of the future being worse than the present are not new. A study in the 1980s in which students wrote about a normal day in their life in the year 2000 reported expectations of ‘violence, unemployment, high technology, boredom, inflation, poverty, pollution, material prosperity’ (Brown 1984). A similar Australian study in the 1990s that involved young people envisioning the year 2010 found, ‘most young people see the future mainly in terms of a continuation or worsening of today’s global and national problems and difficulties’ (Eckersley 1999, 77). Eckersley acknowledged these visions had even deeper roots: ‘Apocalyptic myths about “the end of the world”, which have always been part of human mythology, including most major religions (this relates especially to fears about global catastrophe, such as a nuclear holocaust)’ (1999, 84). Alternatively, Hicks (1996) connected fears about the future of young people in the UK to contemporary socio-political concerns. The digital stories in this study reflect both archetypes in storytelling and climate change as a contemporary issue that is shaping perceptions of the future, although that is perhaps unsurprising given the research design and participants.

The positive solutions – presented visually and in the video narration – emphasised two themes: green technology, like renewable energy, and individual change, for example more sustainable consumer choices. Researchers have critiqued climate policies that overly rely on techno-solutionism, and the UK Climate Change Committee’s Net Zero report assessed that 62% of emissions reductions would need to come from societal/behavioural changes and measures that combine societal/behavioural changes and low carbon technologies (Committee on Climate Change 2019; Nelson and Allwood 2021). Social scientists have also critiqued environmental policies and discourses that focus on behaviour change rather than systemic change related to power, culture, and social practices (Shove 2010). Climate educators interested in the practice of speculative digital storytelling may need to actively introduce concepts related to sociotechnical transitions and systems (change) thinking into the digital storytelling workshops to address these critiques.

The second concern of this research was the impact on young people of creatively engaging with the future through speculative digital storytelling. As an arts-based form of participatory action research, digital storytelling methods are acknowledged to potentially have an impact on the research participants. The digital storytelling workshops were also a form of environmental and sustainability education that creatively engaged with climate change, with potential outcomes in terms of knowledge, attitudes and behaviour. This impact was explored in the focus group conversations at the end of each workshop, where students expressed satisfaction and pride in their work. Specific skills and competencies related to digital communication were also demonstrated by the students through their multimedia productions.

Through an exercise in which the participants identified the emotions they feel with respect to the future, the digital storytelling process appears to have supported a shift from more negative to more positive emotions. While the participants were still worried about the future, they also expressed an increase in acceptance, curiosity, and hope. As Hogan and Pink (2012) noted, interiority is not static and crystallised when extracted as data, and creative research methods may

provide deeper access and also influence inner states. Changes in young peoples' emotional responses to the future also relate to Ojala's model of climate hope that includes positive reappraisal: 'Positive reappraisal is about perceiving the threat but being able to reverse one's perspective and also activate positive emotions that can help one to face the difficult situation and deal with worry constructively' (2012, 636). Ojala's model of hope also includes trust in both self and others, and the shared experience of the digital storytelling workshop may contribute to the collective nature of climate hope. The digital storytelling process also directly responds to calls by Rousell and Cutter-Mackenzie-Knowles for more 'interdisciplinary, affect-driven and experiential approaches to climate change education' (2020, 6). The shift from negative to positive emotions is a valuable outcome in response to widespread climate anxiety among young people (Hickman et al. 2021). In addition, recent research has found a strong relationship between the emotional/cognitive concept of climate hope and action competence, which is the ability constructively engage with future environmental challenges (Finnegan 2022).

In their handbook on digital storytelling, Lambert and Hessler reference a number of applications of story work, including environmental activism and scenario planning (2020). This research is the first reported application of speculative digital storytelling to environmental issues and could be used as a model for future digital storytelling research and practice. The personal, reflective, creative approach of speculative digital storytelling, especially using the prompt of a letter from the future, provided an opportunity to productively engage with the climate crisis, develop futures literacies, and explore the concept of being a good ancestor. Future research could use speculative digital storytelling on other environmental or social issues, as well as work with different age groups. In addition, the students primarily used the stock footage and music provided in WeVideo, and productions may have been very different if original filming and photography was required. While this model of digital storytelling workshops works best with small groups and involves a substantial time commitment, and thus is difficult to scale, there are a wide range of creative activities that can help students develop futures literacies (Miller 2018).

## Closure

*Use your voice to be as loud as you can – our voices are louder together. I'll leave you there, but keep your eyes open. Take care.*

Young people are not experts in future scenarios, policies or technologies. Nor are they fortune tellers. However, younger generations will experience more of the future than older generations, with opportunities to individually and collectively shape it over the course of their lifetimes. The socio-climatic imaginaries young people articulate through speculative digital storytelling reflect their hopes and fears, their sense of both the possible and the inevitable. The process of creatively engaging with the future not only extends their time horizons and futures literacies, but it also provides opportunities for facing climate anxiety, positive reappraisal, and constructively engaging with the climate crisis.

For educators, and others looking to help young people develop resilience and agency, the digital storytelling process can be used as a form of creative, participatory climate education, exploring the causes and impacts of climate change across multiple disciplines, while centring the emotional response of young people to the climate crisis. The results of the digital storytelling process are also powerful tools for further education and engagement, so that work with a small group of students can extend throughout a larger school community.

Students in the UK and Ireland, especially those from a privileged background, are largely sheltered from the already unfolding impacts of climate change on frontline communities. However, exploring their worries about the future in a supportive environment can develop empathy for and solidarity with others, and appreciation for the more-than-human world. Creatively engaging with preferable futures allows young people to anchor their hopes on existing green technology,



different ways of living, and governments responding with the same urgency as they did with the coronavirus pandemic.

A consistent message in digital stories – the letters from young people's future self to their present self – was contingency. Young people are future-shapers, or as one story put it, 'think about your future and remember: you're the one who has to live in the world you create' (DS11). The digital storytellers also spoke of living without regret. As another storyteller concluded: "The one thing I really wish I'll be able to say in 2050 is that I still have hope, that I can still see the silver lining, and, even if things are worse than they've ever been, I hope I will feel like I've done enough" (DS47).

## Note

1. The structure of this article is based on a storytelling model shared by the StoryCenter in their digital storytelling trainings: connection, context, change, closure. Below each section header is a quote from the animated video created from the digital stories produced through this research (<https://vimeo.com/tamarackmedia/2050>). The quotation in the title of this article comes from DS45.

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## Notes on contributor

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