

Exploring virtual and augmented realities

Gillian Rhodes

Climate change can be a challenging topic for schools to teach, especially at primary level. Here, Gillian explains how virtual reality (VR) and augmented reality (AR) provide immersive learning experiences that can help pupils to better connect with the topic.

Introduction

Imagine traversing a vibrant rainforest, immersed in the sights and sounds of one of the planet's most biologically diverse ecosystems. A sloth gently cradles its offspring while suspended from a tree, as two jaguars drink from a nearby stream.

This vivid scene is not taking place in a remote location in the Amazon basin, but in a digital environment that is now accessible to pupils in classrooms across the UK and beyond. The simulation forms

part of the 'Future Forests experience', a VR resource developed by Avantis Education (creators of ClassVR) in partnership with the Rainforest Foundation UK. Designed to support curriculum delivery in subjects such as geography, science and environmental sustainability, the resource allows pupils to explore a simulated rainforest and make decisions that affect its future.

The policy context

When it comes to teaching about climate change, the need for innovative approaches exemplified by ClassVR is urgent. A recent open letter to the UK Education Secretary, Bridget Phillipson, (see Web resources) signed by climate scientists, academics and educators, highlighted significant shortcomings in the teaching of climate change in England's National Curriculum. The letter called for 'systemic reform' to embed climate change and sustainability education across all subjects for learners up to the age of 18; and

claimed there are 'significant and worrying gaps' in pupils' climate literacy that demand immediate attention.

A report from the Department for Education (see Web resources) into climate literacy among school leavers revealed that just over half (55%) recalled recent climate change education, despite its inclusion in GCSE science and other subjects. What is more, 31% said they 'did not know' the extent of global warming since 1850, and of those who did give an answer, 52% overestimated the impact. Perhaps of most concern, just 34% could accurately define 'climate change mitigation' and only 20% could identify the correct meaning of 'net zero emissions'.

An immersive interactive experience

The Future Forests experience takes pupils on a journey, guided by a young Indigenous girl, Nashi. Nashi shows them her home in the tropical rainforest and explains how it can be impacted



Student using ClassVR. Photo © Avantis Education.

through the choices we make. Nashi also introduces the dangers her home in the rainforest faces and the consequences of doing nothing to ameliorate them. As they explore the rainforest with Nashi, the choices pupils make lead to one of two outcomes: either ecological preservation and a thriving rainforest with rich biodiversity, or to deforestation with negative social and environmental consequences. Drawing inspiration from the Amazon rainforest, the experience spans several countries in South America.

This type of experiential learning demonstrates the unique potential of VR and AR in education, particularly in geography. The technology increases pupils' knowledge retention, has an emotional impact and motivates them to learn – which is particularly useful when exploring global challenges such as climate change and biodiversity loss.

Investigating the future of rainforests

At Overchurch Junior School in Wirral, year 4 pupils used the Future Forests experience resource during geography lessons on rainforests. Michael Byrne (assistant headteacher and curriculum lead) explained how using ClassVR brought the topic alive for the pupils and encouraged them to think about the future:

'We are really fortunate to have such an immersive experience link to our curriculum. It brings real issues to life for the

children and helps them to comprehend what is happening around the world. It is really important that, as educators, we tackle prominent issues and develop awareness of what can happen if society continues on this path.'

When compared to traditional learning materials such as static text and images, immersive VR environments provide an engaging, memorable learning experience. In the Future Forests experience, pupils access the content via a first-person perspective (Nashi's); an approach that fosters pupil empathy. The interactive and immersive learning experiences of VR and AR allow pupils to explore rainforests in depth. As comments from the pupils demonstrate, many were shocked and concerned at the consequences of the deforestation they witnessed. One year 4 pupil, Sam, explained how he felt:

'VR actually makes you realise what's happening as if you are there...'

While Otto appreciated the immersive nature of the resource:

'I think because we can experience it and discover how the animals would live in the destroyed environment, it is better than just seeing pictures.'

On the pupil outcomes of using the Future Forests experience, Mr Byrne added:

'The pupils were also motivated to take action, to do something to help the environment. They discussed things they could do to help [these included] making signs and protesting, or planting trees. To have that level of engagement from one resource was remarkable.'

By virtually witnessing the consequences of climate change, such as rising sea levels, extreme weather events or deforestation, pupils develop an emotional connection and a sense of urgency, as exemplified by Darcy, who responded to the resource with passion:

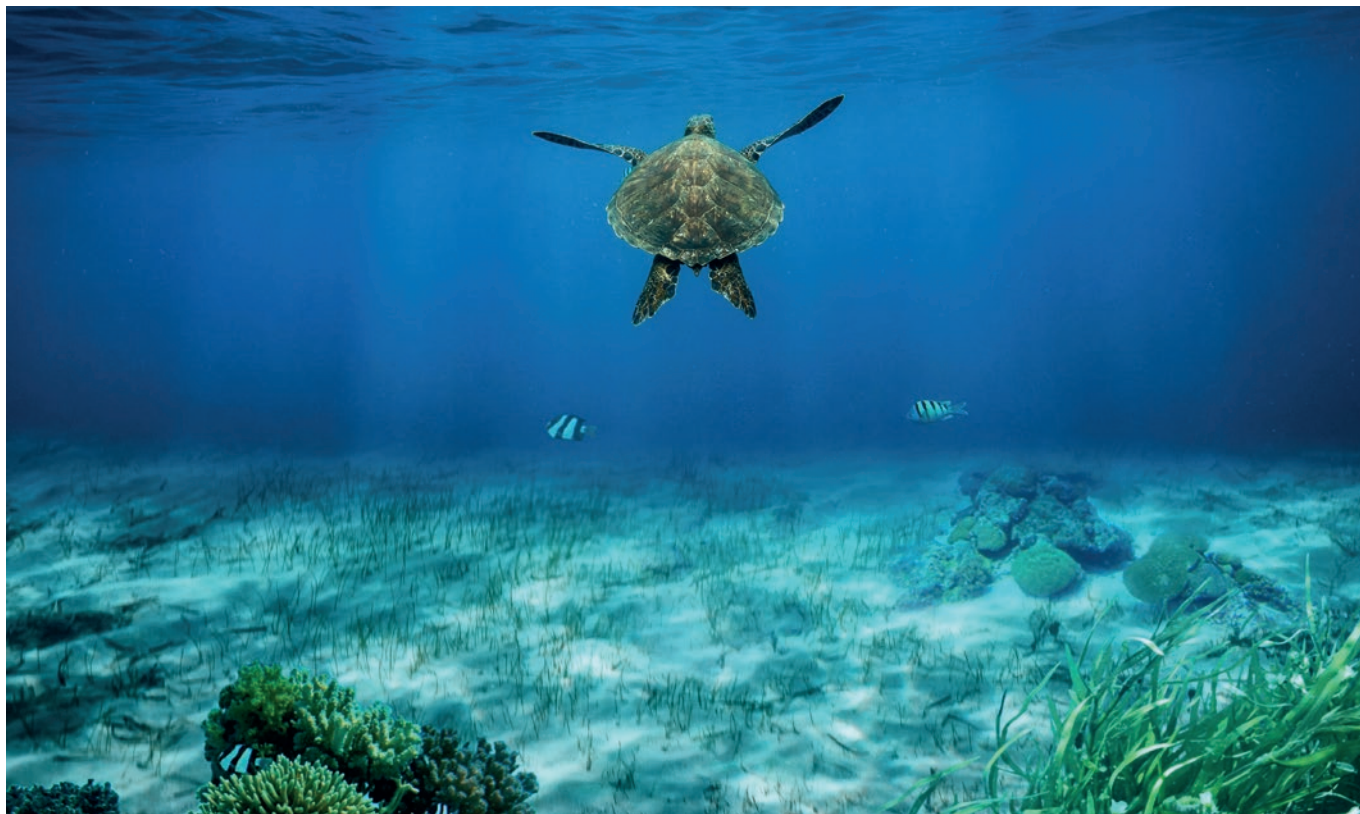
'We need to help the Amazon rainforest by planting trees and protest against companies that are the ones cutting it down.'

Virtual field trips and experiences

Geography teachers are increasingly turning to immersive technologies, such as ClassVR, to enhance their teaching of climate systems, marine environments and biomes. While field visits to mountains or oceans would undoubtedly bring these subjects to life, often the trips are beyond the reach of schools due to practicality and cost.



Teacher immersed in Future Forests Experience. Photo © Avantis Education.



Pupils can take virtual dives to swim with turtles off the coast of the Galapagos Islands. Image by Mollyroselee from Pixabay.

In geography, ClassVR allows pupils to visit a variety of places across the world. Thus, rather than describing alpine geography, for example, teachers can use the resource to tour Mount Fronalpstock in the Swiss Alps, taking in views of Lake Lucerne, the town of Brunnen and the surrounding mountains. Similarly, lessons on marine ecosystems can be enriched by pupils taking virtual dives into the ocean to learn about The Great Barrier Reef, or swim with turtles off the coast of the Galapagos Islands.

These experiences can be used to reinforce other areas of learning, such as literacy. Anna O'Connor (a teacher at the Beatrix Potter Primary School in London) taught a series of lessons around *The Snail and the Whale* (Donaldson and Scheffler, 2017) during which the pupils focused on using imaginative adjectives to describe a scene. The work aimed to expand the pupils' vocabulary and use of synonyms to improve the coherency and fluency of their writing. After using the VR headsets to explore a variety of underwater environments, the pupils were able to apply the adjectives they had generated in previous lessons to a real-life setting, as Mrs O'Connor comments:

'We were amazed by how much vocabulary the pupils were able to use and how they were able to build upon previously-acquired language because they had immersed themselves in the setting they were writing about

... they were able to apply the newly-acquired vocabulary appropriately, for example "shimmering, glistening water" and "majestic, large shark"'

Conclusion

As a fully immersive experience, VR can enable pupils to, metaphorically, 'step into the shoes' of people living in a variety of environments and experience them in ways that are not always accessible through conventional learning media. Primary teachers who integrate the use of VR (e.g. Future Forests experience) in their geography lessons find that pupils appreciate the value of these unique 'environments' in more depth. In essence, the Future Forests experience VR resource enables pupils not only to understand the current challenges of climate change, but also to actively consider ways to shape the future of our planet.

Notes

ClassVR educational VR experiences are powered by Eduverse, which provides a vast library of immersive VR and AR resources that are designed to enhance pedagogy. These include explorable scenes, 3D models, 360° images and videos, spanning a broad range of topics and curriculum areas.

While the most immersive experience comes through ClassVR headsets, Avantis Education has made the digital pack available to all schools for free (see Web

resources). Accessible on any internet-enabled device, the climate change resource is supported by a structured teaching pack, which includes curriculum-aligned learning materials.

Reference

Donaldson, J. and Scheffler, A. (2016) *The Snail and the Whale*. London: Macmillan Children's Books.

Web Resources

Future Forests Experience: <https://www.classvr.com/future-forests/>
Letter to the Education Secretary: <https://www.globalactionplan.org.uk/news/open-letter-to-the-secretary-of-state-for-educationsustainability-and-climate-change-education-in-the-national-curriculum>
DfE report: https://assets.publishing.service.gov.uk/media/67616fecf666d2e4faef3972/Climate_Literacy_School_Leavers_2024.pdf

All URLs last visited 16/7/2025.

Gillian Rhodes is Chief Marketing Officer at Avantis Education. With more than 18 years of marketing experience, Gillian leads the company's brand, strategy and demand generation efforts, with a passion for driving transformation through VR and AR.