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Strong, Jeremy ORCID logoORCID: <https://orcid.org/0000-0003-4618-3327> (2020) How to make a 'Colourful World'. New Vistas, 6 (1). pp. 16-19. ISSN 2056-9688

10.36828/newvistas.107

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HOW TO MAKE A 'COLOURFUL WORLD'

Addressing topics as varied as food supply; sustainable farming practices; climate change; green energy; transport solutions; river restoration, and air quality, Colourful World is a children's computer game that seeks to convey complex and interconnected ideas in a way that is both comprehensible and enjoyable for young learners

Running from 2018 to 2021, and backed by Erasmus+ funding of €264,423, *Colourful World* is a project about creating a computer game and associated learning and teaching materials for children aged 6-10. The project is an international partnership between the University of West London; Szkoła Podstawowa, a primary school in Kraków, Poland; Advancis Business Services of Porto in Portugal; The Environmental Education Centre of Vamos, Crete; SATRO, an educational charity based in Surrey, and Boon Unipessoal, a dynamic design, communication and consultancy company, also based in Porto. The focus of this international project is to help children to understand key Sustainable Development and environmental topics and to develop their interest in science, technology, engineering and mathematics (STEM) subjects. Sustainable Development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (see the 'Brundtland Report', World Commission on Environment and Development, 1987).

Readers for whom the term 'computer game' summons images of the hyperkinetic and vertiginous thrills associated with a *Grand Theft Auto* or *Call of Duty* might need to adjust their expectations at this point. Once completed, the *Colourful World* game will be a more age-appropriate and sedate experience, to be played by children both in the formal context of the classroom and in informal settings outside school.

Belonging to the point-and-click genre in which players negotiate their way through several levels by collecting artefacts, completing tasks, and engaging with information and cues presented in text bubbles, the aim is 'playful pedagogy'.

Computer games and learning

Many claims have been made for and against the value of computer games in encouraging learning. In some accounts they encourage enjoyment and engagement, helping users to recall information as well as fostering cognitive and social skills. However, excessive use of certain games has also been identified as linked to social isolation and violence (Mitchell & Savill-Smith, 2004). Bjorklund and Pellegrini (2010) chart how evolutionary psychology has stressed the adaptive functions of play, while a beneficial role for play has, in developmental psychology, been a recurring preoccupation for major thinkers such as Piaget (1962) and Vygotsky (1978). This 'playful pedagogy' aims to place the *Colourful World* game at the heart of a series of inter-connected play/learning activities.

A key part of the interactive narrative approach that the team decided early on was a game structure that involved the player's on-screen character being visited at home by a series of talking animals who would each be experiencing different problems associated with climate change and environmental degradation. With the arrival of successive animals – rabbit, duck, dog – each of whom becomes an inconvenient house guest until their problems are





resolved, the player is obliged to visit a new setting, and then to investigate and fix the issues. In the course of the game, players engage in a series of positive environmental and Sustainable Development tasks that enable the animals to return to their, now remediated, homes and habitats. Their interventions include: planting field margins with wildflower and grass seeds to encourage the return of wild pollinators and natural predators for pests; getting a new solar plant up and running; restoring a forest to prevent soil erosion and improve air quality; 're-wilding' a river by restoring its natural flow, and petitioning a mayor for an improved urban transport infrastructure. In the course of the project it is intended that children will come to see environmental and Sustainable Development issues as matters that apply both locally (at home, at school) as well as nationally and globally. It is in the iterative process of deciding the overall trajectory of the game and hammering out the details of its content that the blend of skills brought by the different partners has proved so important.

Design and development

Combining actual meetings of all parties – so far, in London, Crete, and Porto – with Skype meetings and email exchanges, the game has progressed from a concept, through scripts with dialogues, to initial visuals and coding. Throughout, the substantial experience of working with younger children that several of the partners have enjoyed over many years has been critical in ensuring that themes and topics are conveyed in a fashion that is clear and to-the-point. It has certainly been a challenge for the University of West London's project coordinator, a Professor of Literature and Film more used to writing peer-reviewed articles on Jane Austen or Ian Fleming, to adapt to an idiom that is far less long-winded than his usual fare!

Making sure that the information presented in the game is factually watertight has also been an interesting process. Given the ubiquity of environmental discourses and associated stories across the media for many years now, most people would think they already know enough about these issues to put together a body of information for children about such a project. It transpires that this is only half true. In the course of agreeing the game content, partners engaged in wide-ranging research, fact-checking, and debates to ensure that what was put together was robust; for example, on the extent to which food supply depends upon pollination by bees. The team also had illuminating discussions on how far the game could stray into subject matter that might be contentious or awkward. Would it venture into the potentially deleterious environmental consequences of meat production,



or the connection between individual families choosing to have many children and the global challenges of a rising human population?

High quality learning

From the outset the partners wanted the game experience to be supported by additional high quality learning materials that would enable teachers and others to deliver the game with confidence and use it as a springboard for activities and tasks both in the classroom and beyond. A 'Key Facts' supplement for teachers pulls together salient information from recent authoritative sources, so that those tasked with delivering *Colourful World* can augment or refresh their knowledge base. Similarly, an accompanying 'Glossary' of key terms helps teachers explain relevant words and concepts in straightforward language. However, there is an issue with intergovernmental and European sources that are rarely drafted with a view to ease of comprehension for the lay reader, and



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especially not for their adaptation to bite-sized knowledge nuggets for the under-10s. Nonetheless, these sources and many others like them have been mined for material that should give teachers – the key intermediaries in the game experience – a sense that what they are delivering is rooted in the best that the scientific and policy-making communities currently know. At present, the game and all its associated materials are being written in English but they will be translated into all the languages of the project partners.

The next couple of years will involve a range of key activities on the project. Presentations to selected schools and educational institutions across Europe will disseminate updates on the progress of *Colourful World*, and partners will use their established connections with such stakeholders for the pilot testing of the game and associated materials. This phase will enable the game to be modified as necessary in response to user feedback and also to prime the educators who are likely to be among the first groups to use the completed version. A website and a Facebook page bring together a growing set of resources relevant to teaching children about Sustainable Development and STEM topics. With the website serving as a repository of the materials produced in the course of the project and as a meeting point for people who wish to become involved and/or who already have an interest in the field. A variety of contests and challenges are also being developed – aiming to engage children and educators in the project and to raise awareness of Sustainable Development themes. At the time of writing, the project team are promoting a competition for primary schools across Europe in which groups of children are invited to submit posters showing young people's actions to protect the environment and support sustainability, and to promote eco-friendly behaviours and attitudes among children.

As recent media coverage of teenage campaigner Greta Thunberg has demonstrated,

sustainability and environmental concerns have become increasingly important to young people who, to a far greater extent than previous generations, will have to deal with the consequences of a changed climate and damaged ecosystems. *Colourful World* hopes to play its part in developing the environmental literacy of children; to help them gain and deepen their knowledge of ecology and environmental protection; to motivate them to take an active part in environmental campaigns and actions, and to promote activities aimed at environmental protection.

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Colourful World website:

<http://www.colourfulworld.eu/>

Colourful World Facebook page

<https://www.facebook.com/colourfulWLD/>

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Keywords

Sustainable Development, computer games, childhood development