PERHAPS UNSURPRISINGLY, 78 RESPONDENTS SAID THEIR FAVOURITE THING ABOUT THE CLASSROOM WAS THE PROVISION OF VR HEADSETS.

THE THINKING BEHIND THE SPACE

Alex More had an opportunity to transform an old art room in his school in Dorset, UK. We find out what was behind his personal version of a "Future Classroom".

Imagine a time-travelling child from 1870s' Shaftesbury, England. If they were transported to 2021, they wouldn't recognise our transport, our technology, our fashion and many aspects of our world. But when they arrived in school they would instantly recognise the classroom with its rows of desks, chairs and the teacher stood at the front imparting knowledge.

In a restored art room at Shaftesbury School in Dorset is a very different space, designed to disrupt this way of teaching: the Future Classroom.

Creating an agile learning space

The project was imagined by Alex More, lead teacher of innovation in teaching and learning at Shaftesbury School. The idea was to create an agile learning space – a place where knowledge and skills are both valued, where technology supports the teacher but does not replace them.

Alex partnered with Epson, Catchbox, Gratnells, SatComs Innovation and Biotecture to design and create a space fit for learning in the twenty-first century. Working with industry was key to the success of the project in order to find a balance between what students need to know now and what they will need to know in the future.

The room has been set up to be agile so that the teacher can position themselves at the heart of the action. The students are the main actors in the learning process and can design the room layout according to what they are learning at that moment. The classroom is equipped with state-of-the-art technology, loaned from partners and sponsors within the edtech community. Pride of place is an Epson EB-1485Fi short-throw projector, which displays images up to 120 inches onto a SMIT visual whiteboard. This allows all students to see the content displayed from anywhere in the classroom. You might say it follows you around the room like the *Mona Lisa*'s eyes.

Catchbox, an edtech start-up, has designed a soft, throwable engagement microphone. It is an amazing tool for questioning and gives all students a voice in the class, even the quiet ones. The Catchbox Plus comes with a teacher microphone that amplifies the teacher's voice and is really useful for training, CPD and observation coaching.

Gratnells has provided a Learnometer, which measures seven variables in the room: temperature, humidity, ambient noise, CO_2 levels and other factors to monitor the learning environment. Too much CO_2 in the air can harm learning, so research supported by Professor Stephen Heppell inspired Alex and the team to create a "living plant wall" to help absorb CO_2 levels. Growing Revolution and Biotecture, industry leaders in living plant walls, helped to make the change.

Students can express their ideas via the 13 whiteboards that line the walls or a digital lightboard made from glass and LEDs. A greenscreen also provides a canvas for creativity.

Two models of learning

Central to the technology, though, is the teacher. Alex has designed two models of learning to help structure the lessons, which are based on his own research into flipped and hybrid learning.

Model A is based on John Hattie's ALT (Academic Learning Time) research. Twenty-seven minutes represents the optimum time students are able to focus on a task, so the learning is divided into new content, a break, then embedding content. In the new classroom, the teacher delivers new knowledge through a blend of direct instruction and "warm" technology (technology that helps deliver person-to-person interaction, rather than the machine-like AI and edtech).

In Alex's Model B lesson, students learnabout hydroponics as a sustainable way to grow food in the future. They are tasked with creating a future growing medium to grow food in their own house. A short introduction to aqua, hydro and aeroponics sets the scene. Students work in groups of four and rotate around a series of stations that have been set up to be agile and immersive. A group "brings" plant species into the room via Google Expeditions AR (augmented reality) and discusses which species they are most likely to grow based on room temperature, growth periods and plant resilience. At the same time, another group is in a VR (virtual reality) journey, exploring plant cells and working to understand which species best suits their needs. On the SMIT visual whiteboard, a group uses 3D software to dissect a plant cell, while another group studies the fish tank that is rigged with a Raspberry Pi to monitor water flow and nutrients. They discuss the role of AI and evolution in growing food and the ethics associated with this. A final group draws their ideas on a digital lightboard. Groups rotate and learning happens.

The last 27 minutes sees students working in their teams as leaders, presenters, scribes and research assistants as they are tasked with creating a presentation on their growing medium. As the lesson concludes, students present their product to their peers using the Catchbox microphone to promote their ideas. The teacher is guiding from the side, ever present but rarely at the helm.

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Phase one of the Future Classroom project is now complete and a survey has shown how popular it could be with students.

In a questionnaire of 50 Key Stage 3 and 4 students, 46 per cent said all classrooms should be set up like the Future Classroom, while 54 per cent said classrooms should incorporate parts of it. Learners from that age group were also asked about their favourite aspect of the Future Classroom, and 26 per cent said the absence of desks. Other favourite aspects of the room included its layout, the whiteboards on the walls, the virtual reality (VR) headsets and the Catchbox microphone.

Students were asked to comment on the classroom, with one saying: "It's more interactive than any other classroom in the school."

Another said: "It takes a different perspective on learning, it gives us more responsibility."

One summed it up like this: "It's got a wide range and variety of learning methods, allowing everyone to learn in their own way."

In a survey of Key Stage 5 students, or Sixth Form equivalent learners, 84 out of 179 respondents said all classrooms should look like the Future Classroom, and 75 said they should maybe look like it. Perhaps unsurprisingly, 78 respondents said their favourite thing about the classroom was the provision of VR headsets.

Perhaps one day the Future Classroom will indeed become a reality for the majority of students. ■