Can Robots End Isolation and Disruption for Unwell Students?

A small robot is making a big difference for children who are too unwell to attend school. Sarah Dove and Cath Kitchen show how AV1 allows these young people to access education while undergoing long-term medical treatments or recovery.

Professionals who work within alternative provision for students with medical and mental health difficulties are constantly seeking innovative solutions to increase the numbers of hours of education they can access, as is their right. For students who are too unwell to leave their homes, this can be a real challenge—until the arrival of the telepresence robot, AV1.

AV1 has been developed by the Norwegian company, No Isolation. Currently, more than 850 AV1 telepresence robots are in use across the Nordics, UK, Germany, France and the Netherlands, with many more children and young adults having been supported via AV1 since launch in 2016. In the UK alone, there are now more than 200 AV1s in use.

With the Department for Education's 2018 publication of 'Creating Opportunities for All', the Alternative Provision Innovation Fund was created, and a trial to investigate the efficacy of utilising telepresence robots to support children and young people accessing education whilst they are unwell has been agreed. The project aims to assess whether or not pupils are able to re-engage with their learning, attend and progress while receiving treatment or recovering from surgery or illness.

The project is ambitious and large scale, with 90 AV1s being distributed across the country, and bringing together educators from schools, hospital education provisions and short-stay schools in looking at AV1 use as an alternative to more traditional methods of home tuition. Home tuition will typically be provided within a student's home to provide one-to-one lessons. The AV1 does not look to replace this, rather it is designed to bring another dimension in, allowing children to virtually attend schools even if they are unable to leave their homes or hospital beds. Although this is a cost-effective solution, the benefits to the student in interacting and remaining connected to their home school is priceless.

The AV1 is a telepresence robot that attends school in the child's place. The child controls it using an app on a tablet from wherever they may be: for example, a child with complex needs may be receiving treatment in a hospital far away from home, but they can still be listening and seeing what is happening within their class.

Not only can the child see and hear their lesson, but the AVI also allows them to contribute and participate through the two-way speaker. The AV1 has several functions which help the student to actively participate, and the app is simple and intuitive to use. For example, if a child using the AV1 wants to answer the teacher's question, with the press of a button, they can 'raise their hand', which notifies the teacher and their classmates through a white light flashing on the AV1's head. However, if the student is feeling unwell and just wants to listen in to the lesson and not participate, they can indicate this by turning the head blue. Similarly, if the tasks move on to group work, the student can use the app to turn AV1 round to face their friends and lower their voice. The AV1 takes the physical place of the student in their home class back in their school. The student can not only talk through the speaker, but can also indicate how they are feeling using their 'expressive eyes'—happy, sad and puzzled. The student is encouraged to decorate the AV1 to make it more personal to them and to give them a name—we have Zoebots, Benbots and others!

The benefits are not constrained to participation within lesson—they are also about supporting the student in not feeling so socially isolated and lonely. Often, being unwell can be a 'double whammy'—dealing with a complex illness and losing contact with friends and school. The project has ensured that data relating to the sense of isolation is also being collected, along with attainment measures.

A teacher from a Gloucestershire school reports the impact that having the AV1 in their class in terms on offering opportunities for continuity of education:

> *My Year 9 class were doing some preparation for their Year 9 English exam, focusing particularly on the question which asks them to explore the structure of a text. They read and discussed an extract from the novel* The Woman in Black *from their anthology.*
>
> *The pupils and I found it incredible that Sue was able to participate in the lesson to such an extent. She read an extract from the text, answered questions and shared her written answer at the end. Her voice was loud and*

clear—there was no distortion and no breaks in the sound. We felt as if she really was in the room with us!

Whilst the Robot generated a lot of interest at the beginning and the pupils were very enthusiastic about it (they named it 'Sue-bot') I do think that were it to be in every lesson, it would be really unobtrusive and no-one would take any notice of it—it certainly didn't get in any one's way. I actually liked having it there—I felt rather affectionate towards it; it really was like having a little person there with the pupils and I felt like I was talking to Sue when I spoke to it.

At the end of the lesson there was some time for the pupils to ask Sue what the experience was like from her end, they were really interested in how she controlled the Robot and how much she could see in the classroom. She demonstrated the range and all the pupils gave her a wave.

Many thanks for letting me enjoy this experience—it did all feel rather exciting!

The pupil who was controlling AV1 also shared their experiences. The year 9 pupil from a Gloucestershire school said this:

> *To be honest, I was actually incredibly surprised at how well the robot worked. I genuinely felt I was part of the lesson even though I wasn't there. I was able to contribute to the class discussion and I was clear on what was going on. I didn't miss out on anything either. This will be a really useful tool for children who can't go to school for whatever reason and will allow them to be a part of lessons in whatever subject. The camera was very high quality and I could see everything on the board and even potentially watch videos or clips from the internet. I really enjoyed trying it out too, as it was a new experience and quite fun! This new piece of technology definitely has the ability to really help people and become more common around schools.*

Some schools are nervous about using AV1, as they are uncertain about the implications for GDPR and nervous about who might be observing the class through the app, along with the student. The visual data is streamed from the classroom to the tablet one way and is end-to-end encrypted and not recorded. The student and their parent/carer sign a terms and conditions document about how they will use the tool, and if any attempt is made to screenshot the stream, the robot will be switched off: the speaker is two-way. The schools need to risk assess the home setting and if they feel uncertain about the way in which it is being used, then they can switch it off. Other schools have managed this 'risk' and are using it successfully every day.

AV1 requires a 4G connection to work, and connectivity can be an issue in some areas. The technical team from No Isolation work hard to come up with solutions and are actively engaged with school IT teams. It really is 'teamwork'!

Early indications from the project are promising, with participants reporting that they are now

looking forward to returning to school and are less anxious about still having the friendships that they had before they were unwell. Their peers like being able to maintain contact with their friend and school staff are pleased to have a practical solution to manage the student's frequent absences. Watch this space for the final report and plans for the future!

Sarah Dove is the strategic director for Phoenix Education Consultancy and the project manager for the DfE innovation fund project investigating the efficacy of telepresence robots to support young people in accessing education whilst unwell or receiving treatment.

Cath Kitchen is a National Leader of Education for hospital education and is the Executive Head Teacher, The Skylark Partnership Medical Needs MAT. She is the project lead for the DfE's Alternative Provision Innovation Fund to assess the efficacy of the telepresence robot known as 'AV1'.