Beyond the rural classroom

Recruiting specialist teachers and providing a wide range of subjects for students to study is often a challenge for rural schools. **Ed McEvoy** describes how videoconferencing has solved this problem for a number of Irish schools and opened up a world of opportunities for their students.

Education is an industry under constant scrutiny. Continuous changes to the way schools are run prove extremely challenging to school leaders. Delivering the curriculum in a creative and engaging manner is always a concern.

Thousands of young adults are spending their university years learning in the traditional classroom where teaching is always face-to-face. However, with interactive technologies entering the educational space, video conferencing could be an alternative way for teachers to communicate.

Barely a month passes when there isn't a new technology that's meant to radically change education. Often these don't come to fruition, yet several advancements really do have impressive classroom applications –iPads, laptops and online games, for example.

The difficulty is that there is still scepticism and fear surrounding technology in the classroom. When understood and used effectively, it can be an exciting and rewarding tool to engage students. It can also solve problems occurring in schools, like those I manage in rural Ireland. These vary from small class sizes and teacher numbers to rural locations with poor internet connections. All of these have negative implications for our ability to teach subjects students are interested in.

Like most big shifts in industry, a number of different factors need to align before any technology becomes truly influential. There was no point in having an iPad if there weren't any decent applications installed or if cost was prohibitively high and would result in schools cutting back elsewhere.

Technology to tackle rural challenges

Schools in County Offaly are spread across a large geographical area. They have small classroom sizes and limited teachers. This means we face many of the same challenges that affect rural schools all over the world – provision and breadth of curricular choices.

In Ireland, it is a recognised advantage if secondary school students who are seeking physics and computing degrees at university take applied mathematics in their senior year. Although the subject, a mix of physics and advanced mathematics, is not part of the core curriculum, it does put students at a distinct advantage if it is their chosen academic path in university. Unfortunately, the subject only interests a small number of students, so many schools cannot afford to provide such classes.

In this case, school leaders are forced into tough decisions every year about what and how subjects will be made available in each school and this has a clear impact on our students as they move on to further education.

For certain subjects, like applied maths and other STEM subjects (science, technology, engineering and maths), we obviously didn't have the resources to provide them at every school to a handful of students. Another problem we wanted to tackle was language teaching and increasing the exposure our students have to other cultures – something I am passionate about.

Ideas around videoconferencing had been simmering away in the back of my mind as a tool that might be able to address these points. If used correctly, I felt it could be hugely beneficial to students in their last crucial year before university. So, there was a compelling education case for an interactive technology that could help spread a lesson over more than one classroom and connect Offaly students with other schools globally.

However, there are always drawbacks, as many teachers will have experienced. Before we could implement the technology I had in mind, there were barriers that had to be removed. Some of the challenges were in our control, such as convincing parents, the school board and other stakeholders that the project was worthwhile. But other hurdles were out of our control – such as the well publicised difficulties rural areas have with connectivity. Obviously, the type of meaningful online interaction we were aiming for relies heavily on high-speed internet. Fortunately, County Offaly was one of the earliest recipients of the Irish Government's National Broadband scheme, which aims to deliver 100MB broadband to all secondary schools.

Beyond the walls and beyond the seas

Once we had access to high-speed internet connections, all we needed then was a technology solution to bring specialised teachers into the classroom.

Almost exactly a year ago, we introduced **LifeSize** Team 220 HD videoconferencing units with twin cameras into every school in the county. The project, which we called ConnectEd, incorporates two initiatives.

The first strand, Beyond the Walls, takes advantage of the fact that specialised subjects became economically viable when taught via video. A specialist teacher in one school can broadcast a lesson, such as applied mathematics, to five other schools in real time. This means that students can still ask questions and interact like they would in a normal classroom.

Suddenly, we could offer our students a much wider variety of subjects, which gives them a vital advantage before heading off to university.

Question Twelve

$$\text{Speed} = \sqrt{(8)^2 + (28 - 9.8t)^2} = 10$$

$$(8)^2 + (28 - 9.8t)^2 = 100$$

$$64 + 784 - 548.8t + 96.04t^2 = 100$$

$$96.04t^2 - 548.8t + 748 = 0$$

$$t = \frac{110}{49}, \frac{170}{49} \text{ secs Ans}$$

Science and technology subjects are so important for our future, not only economically but also societally. This is why we're so passionate about expanding the options. Previously students would often only have the choice of doing one science option at senior level.

The second initiative, 'Across the Globe,' links our LifeSize HD videoconferencing systems in local schools with partner locations across the world. For example, Árd Scoil Chiaráin Naofa in Clara, County Offaly linked up with Ware County High School in Georgia through the VEC's relationship with Georgia Tech University.

One of the first joint science projects between the schools was based on local geography. Offaly is in a bog area while its partner in Georgia, more than 6,000 kilometres away, was based in a swamp area. The students presented their research on the ecologies of their local areas over LifeSize collaboration technology.

The aim was to compare and contrast the differences between the two areas, but interestingly they found that the ecologies of the bog and the swamp were actually very similar. The one major difference was that there were no predators living in the Offaly bog – whereas alligators lurked in the Georgian swamp!

The science education part of the initiative has been fantastic and interestingly, both schools were on a similar academic level. Though perhaps the area that most interested the teenage students was getting to interact with children in another country and find out what the experience of growing up was like.

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Partnering

Obviously, we're teachers not engineers, nor are we big enough to have a vast IT team. To make a project like this work, a school needs to not only have all of the factors mentioned above, but also it's crucial to find a partner that will supply the very best technology and deliver it on time, within budget and to a high standard.

The videoconferencing solutions were initially set up with the help of significant sponsorship from benefactors such as the Network and Infrastructure Support Limited (NIS Ltd). NIS, in particular, worked with County Offaly VEC, helping support its IT implementation.

"We'd done trials with a number of different videoconferencing options comparing factors such as image and sound quality, ease of use and price. LifeSize was the clear favourite," explained Gerry Buckley, CEO of NIS Ltd.

Where are we now?

Even though the scheme is in its infancy, we're already seeing the great results. Previously our students did not have any access to applied mathematics, now we have those that are interested studying it twice a week. Access to university in Ireland is done through a points system. For students with a talent for science and mathematics, this will enable them to gain more points. This is crucial in helping them to get into their course of choice at university.

Additionally, classes in rural Ireland are having regular face-to-face interaction with a school in the United States.

My school, Tullamore College, has also teamed up with a partner school Georgius Agricola Gymnasium Chemnitz in Germany. Students have regular face-to-face contact with their German counterparts, enabling both sets of learners to practise their foreign language skills.

What does the future hold?

While the steps we have already taken are significant, Offaly is only at the beginning of its video journey. There are vast opportunities. The next science project between Georgia and Offaly will see the children design telepresence robots that the other class will be able to operate remotely.

There is also a much larger expansion of the network planned, with more partnership schools in Germany and France. The hope is that the videoconferencing systems will get used even more often. For instance, adult students will be able to take Third Level courses on an outreach basis. There is also the ability to record classes, which means that even if students miss a class, they can catch up.

Additionally, there is a plan to increase the number of specialised subjects that are available in rural areas, and the schools will be holding extra tutoring classes before exams through the videoconferencing solution.

I couldn't be more delighted that the small idea in the back of my mind became a reality and the use of the technology truly paid off. We have deep commitment to the promotion of science and languages, and videoconferencing has given us a great tool to stimulate an interest in these subjects. We are reaping the rewards of putting videoconferencing in place. This technology has a radical impact on our students and those abroad providing a fuller, more rounded education.

Ed McEvoy is principal at Tullamore College. He was Acting CEO of County Offaly Vocational Educational Committee until June 2013.

Knowledge trails

1) Schools without walls – Stephen Smith explores how teachers are using Tandberg videoconferencing to pool their resources and enhance the learning experience.
library.teachingtimes.com/articles/tandberg-videoconferencing

2) Virtual Vikings – Hannah Trinder investigates an innovative project which allows students to converse with 'real' Vikings across Skype and discover what life was like as a bloodthirsty Scandinavian warrior.
library.teachingtimes.com/articles/virtual-vikings