Remote learning during the pandemic has ushered in new ways of connecting teachers and students. Hugh Gatenby imagines a bold new future where remote learning, technology and reimagined classroom design combine to revolutionise education.

THE SHAPE OF THINGS TO COME

A new type of learning

Fifteen and a half million students in the UK were affected by school closures during the Covid-19 pandemic, UNESCO reports. From their homes, students relied on remote learning technology to link them to their schools, where their teachers were broadcasting lessons from otherwise empty classrooms. It was an unprecedented experiment into the viability of remote learning, and one that teachers and students were forced into without any time to prepare, and with inadequate resources – particularly the prerequisite laptops or tablets. In spite of these obstacles, Ofsted's research into remote learning found that the majority of teachers expressed some confidence that they were delivering a high-quality education.

Remote learning is possible: we can connect teachers and students in different places to form one shared learning experience. This conclusion might seem irrelevant in light of the full reopening of schools. It has certainly been important to restore students with a school life that is separate from their home life, and we no longer need to link homes and schools together. However, linking schools to other schools with remote learning technology is a powerful prospect. Anthony Seldon, educationalist and historian, is critical of the familiar classroom. He likens them to factories where every student is given the same treatment as if on a production line, even though they progress at different rates in different subjects. Those who learn slowest are soon left behind, and those who learn fastest become disengaged and disruptive without being adequately challenged.

This "factory model" of learning has remained unchanged because it has been impossible to imagine an alternative without adding to the cost of education by increasing the staff to student ratio. If you need to bring together 30 students for every lesson, it is hard to ensure they are all at the same point in their learning, or that they experience the same barriers to progressing, when you can only draw from a relatively small school population. This is where the recent success with remote learning becomes relevant. By linking schools to other schools, teachers could lead lessons with well-matched groups of 30, drawing from the whole school-age population. Seldon has argued that we are in need of a revolution in education: remote learning could be it.

A new design of classroom

To implement this kind of learning in our schools we will need to reimagine classroom design. Classrooms designed for remote learning will be a different size to the classrooms of today. Since the group for each lesson will be spread across a number of schools, no single classroom will need capacity for a full cohort of 30. Instead smaller classrooms will link with other smaller classrooms up and down the country.

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These classrooms will also need to be designed with integrated technology. Remote learning from home worked, but the technology used did pose limitations. Portable devices like laptops, tablets or, worse, smartphones, limit interaction to small screens. These devices also only capture a small area with their webcams. Remote learning could be even better in the future if we emulate the approach of virtual conferencing facilities with integrated video link technology. In these spaces projectors are configured so that other rooms appear across entire walls. This is a much more immersive way to interact, where people are seen in real size; with their surroundings, which, like whiteboards, might be crucial for learning; and can move around without being cropped.

It will be as if the walls of every classroom were windows onto other classrooms across the country. These spaces will virtually link edge to edge. We must design them not as stand-alone rooms, but to fit together effectively. By using hexagonal rather than rectangular classrooms for remote learning, we could bring the connecting groups closer together, despite the distances between them. Rectangles tessellate without gaps or overlaps, but hexagons do so more efficiently. No other shape tiles so densely, which is why nature abounds with tessellating hexagons, forming the cells in a beehive or the receptors of a dragonfly's eye. It is not only the size of the classroom that might be transformed by remote learning, but the shape too.

A new method of construction

New ways of doing things are enabled by particular technologies and by particular construction strategies. Co-working, which has redefined office culture since the turn of the millennium, is a good example. Co-working's casual model of working is enabled by portable electronics like tablets and laptops, allowing us to work when and where we please, and by the open-plan spaces made possible by the large spans of steel-frame office construction. Just as video link technology will be essential in creating a national network of classrooms for remote learning, prefabricated construction will be too.

With such an ambitious undertaking as transforming schools up and down the country we need an economic construction strategy. By using a design which is standardised for virtual compatibility, it becomes possible to mass-produce classrooms in large sections which are then assembled on site. This process of prefabricated construction delivers cost savings compared to traditional techniques; it draws on the economies of volume that come with factory production; it decreases build time and reduces the risk of delays due to bad weather. Prefabricated buildings also deliver cost savings throughout their lifespan: factory conditions allow a high level of precision compared to construction sites, which makes it easier to create better-performing thermal environments, lowering energy use.

ArcED

ArcED was founded in the throes of Covid-19. That very particular context has informed our mission. The pandemic saw students across the country leaving their schools, adapting to remote learning from home, then returning to schools, only to be sent home once more. Students seesawed between the two, and the debate was similarly polarised: some welcomed a new era of digital learning, others defended traditional schools. At ArcED we aim to present an alternative to this binary choice. We believe that great edtech and great school architecture are compatible, because both share a common goal to create meaningful connections between students and teachers. Our ideas for an education for the future continue to evolve, but we are certain that both technology and architecture will have parts to play. ■