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The future of education: lessons from educators

In partnership with



Introduction

The events of 2020 and 2021 saw educational networks of all levels, styles and sizes pivot to support teaching and learning in new ways. As educators rushed to try different ways to deliver teaching and learning remotely, and experimented with pedagogy, their institutions scrambled to implement the right technologies and practices to support teachers, students and families. These two painful years will be remembered both as chaotic and stressful, but also as a Petri dish for educational innovation.

From late 2020 through early 2021, IBRS conducted interviews with 38 leaders in education (principles, teachers, technology leads, curriculum consultants, university executives, etc.) to track the changes taking place. It was clear from these interviews that as educators and students were exposed to new options for engaging in education, new challenges were emerging, but also new opportunities. Educators had not got everything right on the first attempt, but problems and shortcomings in the teaching and learning were addressed in days or weeks.

In short, we were learning about new ways of learning, while engaged in the learning.

In January to March 2022, IBRS conducted an additional series of 12 detailed case study interviews with primary, secondary and tertiary institutions, both private and public, from the ANZ and ASEAN region. The goal of these case studies was to validate the lessons learned.

The question is no longer what we have to learn to survive, but what lessons we plan to keep for the future.

This report summarises these powerful lessons.



There is still a lack of a future focus on what education could be like. We're playing catch-up... students and the nature of the world are changing faster than schools.

Carolyn Rhodes

Teacher Academy Director
OneSchool Global

Methodology

For this study, IBRS conducted 12 detailed case study interviews between January and February 2022. The interviews were conducted with a mix of stakeholders: curriculum leads, technology/innovation leads, heads of teaching and learning, and so forth. In all cases, IBRS spoke with at least one person involved in curriculum and teaching and learning practices from all institutions. IBRS also selected institutions from across the Asia Pacific region, and across different economic strata. An effort was made to gain insights from as diverse a sample as possible.

Prior to these case study interviews, IBRS also conducted 38 interviews with Australian and New Zealand educational institutions in 2020-2021, as part of a related study into education use of collaboration technologies and changes to pedagogy and curriculum development.

Information gleaned from these interviews was used to inform the case study interviews, and also as a secondary source of information to validate what was being uncovered in the 2022 case study interviews.

Research Sponsors

This research was sponsored by Zoom. However, the report does not focus on Zoom's solutions nor its clients. It has been conducted independently by IBRS and the findings deal with issues raised during the case study interviews. We thank Zoom for their sponsorship and providing IBRS with an opportunity to explore the long-term possibilities for education.

The Lessons

There is a temptation to focus solely on the most visible changes during the pandemic: those related to how students engaged in education. Yet behind the scenes, a good deal of other quiet, hidden changes were taking place that supported the public-facing activities. These included changes to how teachers planned and crafted teaching activities, how professional development was delivered, and re-evaluating the role of educational institutions within society. For simplicity, IBRS explored the lessons identified into three main categories, as outlined in Figure 1.

Many of the lessons identified in this study have dependencies on other lessons. In general, each set of lessons consists of activities that are built upon each other. New activities and practices at an institutional level are required for changes in curriculum, and changes to curriculum can drive deeper changes to pedagogy.

Figure 1: Categories of Lessons Identified



Pedagogy

How education deliver teaching and learning activities.



Curriculum

How educators plan, structure, create and review learning content.



Institutional

How educational institutions function, both with internal and external stakeholders.

Lesson 1: Resilience starts with digital thinking

The impact of COVID-19 and subsequent lockdowns had an immediate, and extensively reported, impact on all levels of education. Students suddenly had to engage in education alongside increasingly stressed parents at home. Universities struggle to maintain international student enrolments. Video conferencing fatigue has emerged to be a headline concern. In short, education was forced into a sharp, sometimes painful, evolution.

However, COVID impacted different institutions in different ways. Some institutions saw almost no direct impact on educational delivery, other than it being moved to remote engagements. Other institutions struggled with the learning logistics, or faced technical difficulties that hindered delivery of learning.

Schools that had previously leveraged technology to enable 'time-shifted' and 'flipped' learning, already had experience of creating and delivering their curriculum digitally. Institutions that had already embedded 'digital thinking' fared well in general.



With our secondary teachers using Zoom as part of their daily teaching activity, it meant over two-thirds of our staff were already trained. Primary teachers were able to pivot quickly as a result.

Carolyn Rhodes

Teacher Academy Director
OneSchool Global

The development of curriculum within a digital platform has also led most of these institutions to have a formal framework for the creation of teaching and learning content. Digitisation of the curriculum demanded breaking learning into discrete, student-directed activities, which was urgently needed to support remote instruction with the onset of COVID.

Institutions where digital thinking was not widespread struggled early in the pandemic. They had to simultaneously rethink instructional practices and develop learning content.

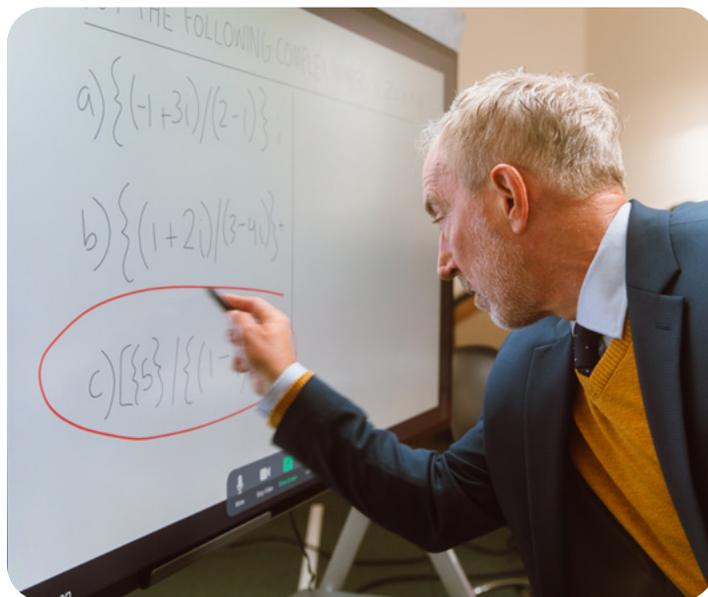
Actions for the future

- Plan new investments in technology, curriculum and pedagogy as if lockdowns could return at any moment. This is not because they will or may, but rather because it forces us to think with a digital-first mindset.
- Move all curriculum development to a digital platform.
- Encourage digital collaboration across all stakeholders.

Lesson 2: The time for innovation is now

If the lockdowns have shown society as a whole - and education in particular - anything positive, it is that institutions can adapt and change quickly, when people are allowed to innovate. Now that educators are aware that they can change quickly and that educational institutions have the capacity to support trials and experiments in teaching and learning, we have the potential for a golden age of educational innovation.

However, this golden age will only happen if educational institutions put in place formal programs to support innovation. Such programs are not 'free-for-all' with the 'fail fast and retry' mentality of start-ups. Student well-being and digital safety are too important to leave to unbridled experimentation. At the same time, such programs must trust educators sufficiently to allow them to try new technologies and teaching approaches, and report on the results of any experiences.



Teachers are now thirsty to try new things. They are constantly asking, 'Hey, can we do this? Can you get this for us? Can we subscribe to A, B or C?'. My question back to them is: 'How will this improve learning for your students?'. If they can't answer this, we sit down together and review the technology.

Hugo Indranto

Technology Integrationist
Mentari Intercultural School

During this study, it became clear that institutions that already had strong programs to support digital education came through the lockdowns far better than those that did not. They also saw their innovation programs mature significantly, both in terms of getting educators involved in innovation, and in putting in place balanced governance and practices to formally fund and review such innovations.

Lesson 3: No school stands alone

The home-school relationship

The importance of the home-school relationship is well known. With the lockdowns, the role of parents in education became one of, if not the most, important factors for K-12 education. Parents were thrust into the role of unpaid teaching assistants, often while attempting to perform their salaried jobs.

Some schools used this time as an opportunity to educate parents through online support programs, promoting sound educational practices, video call engagements to answer questions, and more. In general, these schools leveraged existing investments in their LMS and collaboration platforms to engage with parents. The challenge was not the technology or communications channels, but developing content and programs that would meet the needs of time-poor and often stressed parents.

The upshot of this forced home-school connectivity, at least for schools whose programs were well constructed, has been a significant increase in parent-teacher engagement. This engagement looks to be surviving after the lockdowns, though this may change over time.



The LMS and video collaboration tools give a window into the classroom - they now know what good learning looks like.

Carolyn Rhodes

OneSchool Global

The lesson here is that schools have a window of opportunity to set new expectations and standards for the role parents play in their children's education, and the role schools play in educating the parents to that end.



Community and consumer services

COVID has taught us just how connected our world and communities truly are. From continuing global supply chain bottlenecks to international collaboration to develop vaccines, we have learned that we are not alone. Likewise, educational institutions found themselves dealing with community issues that impacted not only their students, but the people and businesses that interacted with their students.

This was particularly pronounced for the higher education sector, which directly impacts local economies. Students not attending university campuses, or not being able to enter the country, was not only causing pain for universities, but also the local businesses and services.

This prompted some universities to use social media and online community services. Effectively, universities shifted their role as community and economic hubs into digital media.

Actions for the future

- Meet parents where they are - move to more frequent, or even ad hoc, parent-teacher engagements via video.
- Leverage social platforms not just for promotion, but to place your institution as a hub for social good.



We are exploring how technology could help enable us to increase our student population without having to build new school infrastructure and classrooms.

Joseph Ray Garrido

La Salle Green Hills

Lesson 4: Mental health matters

Educational networks have recognised that students' mental health, and ability to deal with mental health issues, impacts success. However, the pandemic lockdowns did several things:

1. It increased stress levels for students, educators and parents.
2. It brought awareness to so-called video conferencing fatigue, which is really a reaction to the stress of being 'always on' with video communications systems.
3. Made student mental health issues more visible, through students' engagement (or disengagement) during online learning activities.
4. Increased teacher stress and burnout, which was already high.

Taken together, the above raised awareness of mental health issues (and neurodiversity) and made talking about them more acceptable within families, schools and society at large. Students' engagements with counsellors increased, not just due to increased stress, but because it was no longer seen as a taboo. Even prior to the pandemic, video conferencing and online counselling was on the rise, due to it alleviating the stress issues with attending mental health practices in person. The pandemic saw tele-mental health sessions skyrocket.

It is unlikely that this cultural change will be reversed. Students and their families are now far more open to discussing mental health and there are new expectations on the role schools will play in mental health programs.

Actions for the future

- Embed mental health considerations as factors into curriculum design. How learning is delivered is impacted by - and impacts - the mental health of students, teachers, and even parents.
- Video, when mixed with other delivery methods, has proven an effective means for scaling up mental health counselling and should be considered a permanent part of a larger, holistic approach to student and teacher mental health.
- Invest in mental health practitioners and digital support services for students, teachers, and potentially parents.



It is important to consider stress and mental health. When students are stressed, they find it difficult to digest [teaching] instructions. [So to ensure] students can comprehend the lessons, they must not be stressed and distracted by making their devices work.

Hugo Indranto

Mentari Intercultural School

Lesson 5: Prioritise professional development

No longer optional, but urgent

Professional development has been called out as an imperative for embedding technology into teaching and learning for decades. Making time for professional development has also been an ongoing issue, especially given the heavy workload facing educators.

COVID forced this issue. Educators had no choice but to become familiar, if not fully competent, in the use of a wide range of technologies for several key areas, in order of urgency:

1. Instruction: how to use both synchronous and asynchronous teaching technologies
2. Collaboration: with peers, students, and parents
3. Content creation: using available tools to create learning materials
4. Curriculum: embedding students use of technologies appropriately



You can put a lot of professional training around teachers, but unless they actually have a mindset to grow their practices, it's not going to make that much of a difference. Perhaps we need to start with how and who we hire. When we're recruiting staff, we look for teachers that understand our pedagogy and have an innovative mindset.

Unfortunately, I think some people who are attracted to the teaching profession were successful in the older, traditional model of education... and since that model was successful for them, they perpetuated it.

Carolyn Rhodes

OneSchool Global

Institutions that were lagging in their use of technology (see Lesson 1) found that time constraints for professional development were most severe. The key lesson is that training in the digital tools of education is not something to leave 'until there is time'. It needs to be made a priority.

Given that professional development regarding technology in education was an imperative well before COVID with underwhelming take up (as evidenced by many educators struggling to catch up), it is important to consider why such lethargy existed in the first place, and whether a return to in-class teaching will see the rush for professional development decline.

The general consensus of participants in this study is that there is a real danger that generational habits in teaching may overpower the recent recognition that the best time for professional development is now.

Professional development goes hybrid too

The difficulty of providing educators time for professional development may be partly alleviated by the use of the very technology with which they need to become familiar. Educators experienced remote professional development firsthand during COVID, many for the first time. Many educators have indicated that they would like to continue receiving professional development in this manner.

Education as performance

In the post-COVID world, professional development is no longer an 'in between classes' activity. It needs to be embedded into the learning activities, with monitoring and feedback for educators.

The rise of granular learning content with mixed modes of instruction and the ability for students to select their learning engagements (to varying degrees), means that how learning is presented to students by educators becomes increasingly important. The performance of the educator becomes paramount to steering student engagement towards the content and activities.



We train and we coach continually. When a new teacher engages a class, we watch the recording and provide feedback on their presentation skills. While some teachers have a natural affinity to be engaging, there is a spectrum of skills. So it is important to continually evaluate and improve teaching staff.

Jarrad Merlo

Co-founder/Director of Teaching and Learning
E2Language

Rather than viewing professional development as a discrete activity, an emerging better practice is for learning experiences to be evaluated. In-classroom or hybrid learning can be recorded and online learning can be tracked in detail. These recordings can be formally reviewed with the objective being to mentor educators towards improved presentation practices.

In addition, seeking student feedback on what works and what needs improvement is helpful, but so too are the digital signals relating to student engagement: videos watched, drop off rates, time when students engage in specific learning content and so forth. All of this information must come together to inform professional development for educators.

Actions for the future

- Leverage digital solutions to provide professional development
- Be wary of vendor-led training for technology - it is often too narrowly focused on feature and function, rather than application and outcome. Instead, apply the same rigour of curriculum development used for student learning, and potentially the same teaching delivery platforms, for professional development.
- Train teachers in performance delivery and continually monitor and reflect. View performance in both classroom and digital settings as skills to be developed.

Lesson 6: Purposeful screen time

Across all institutions interviewed, there was a strong opinion that screen time needed to be explicitly managed by educational institutions. In general, most interviewees stated that less screen time was desired, but deep conversations revealed that the real issue is how best to identify the digital engagements that are both purposeful and superior to non-digital engagement. So, while the discussion around screen time starts at the most basic 'how much time is spent in Zoom classes', it quickly falls into discussions around digital textbooks, how students engage with their learning independently of their teacher, how they socialise with classmates, and how they engage with 'infotainment'.

There is a growing recognition that students' lives are increasingly digital and viewed through the lens of their preferred device. So, the issue is not how do educational institutions reduce screen time, but rather, how do they ensure that digital engagements are purposeful and balanced against other forms of engagement.

When considering screen time, a particularly thorny issue is authentic assessments - that is, creating assessment activities that reflect what students will face in the context of their lives - are increasingly digital in nature. Students are preparing essays in Microsoft Word or Google Docs, producing digital presentations, engaging with interactive online worksheets, producing videos, music and more. So, even while educators are aware that screen time needs to be reduced, finding ways to create authentic assessments that balance digital and traditional media can be challenging.

Actions for the future

- Evaluate the current pedagogical and curriculum design frameworks and modify to reduce screen time to age-appropriate levels. Consider that digital activities need not always require a screen.
- Review past recorded video instructions and rework into key concepts to reduce screen time.
- Using existing capabilities of video and collaboration tools to measure screen time and identify where improvements need to be made.



The idea of screen time is now becoming an integral part of lesson planning. You need to build in deliberate time where students are not working on the screen.

Carolyn Rhodes

OneSchool Global

Lesson 7: Curriculum goes bite-sized

With the rush to remote learning, educators had to quickly re-imagine the content supporting learning, while also changing instructional style. COVID made the link between educational content and pedagogy clearer than ever.

While curriculum outcomes did not change, educators rapidly changed their delivery models, which meant changing curriculum content, how they produced their content and how they assessed students, based in part on the content delivered.

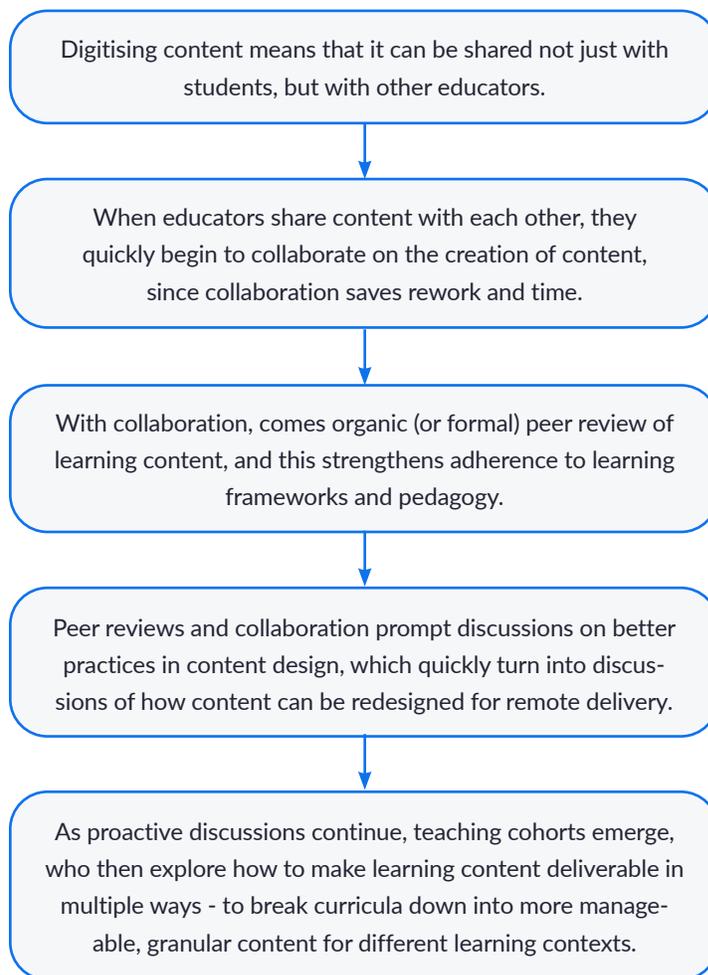
In the early stages of COVID, many educators simply digitised existing learning resources and put them into online LMS systems for delivery. However, such 'drag and drop' learning content was often not well received by students, as it did not match the changing models of instruction.

However, these (marginally effective) 'drag and drop' digitising efforts did kick-start a quiet revolution in how educational content will be created in the future.

This evolution in content development that was boosted by the necessity of COVID will result in highly granular, bite-sized, educational content that can be reused across multiple curricula and upgraded frequently. Both K-12 and higher education reported that supporting hybrid learning required changes to how content was being created, even with the youngest students. Breaking learning content into smaller, singularly focused items became the essential approach, though there is still much experimentation into exactly how content is to be presented.

There is a potential for educators to return to producing learning content in non-digital ways, and not move along the above evolutionary path. However, this would likely become a serious competitive disadvantage for an education network or institution. The bite-sized educational content is highly attractive to secondary and tertiary students, since it allows them to cherry-pick the content that resonates best with them at any given point in their own learning journey. In short, it allows for true student-directed learning. Students can accelerate their learning, or revisit it as needed.

Educational networks have quickly come to realise the following:



Content, meaning, and context

The adoption of bite-sized educational content also means a greater focus must be given to the impact of each learning experience that the content supports. In this emerging model, there is little room for 'busy work' or 'revision' for students that have forged ahead. Every item of content, every learning engagement must be both meaningful and intentional, and be related to the learning environment, otherwise students will disengage.

It was stressed that the development of meaningful content will not happen without a formal pedagogical model that directly addresses the structure and intent of learning content. For example, OneSchool Global embedded governance in their LMS and content creation process to ensure all content adhered to their pedagogical framework that focuses on self-directed learning.

Collaboration drives quality

One of the few benefits from the events of 2020-2021 was the rapid update of collaboration platforms by educators, not just to engage with students remotely, but increasingly to engage with their peers for the sharing of better practices and the creation of learning content. This marks a significant shift in the collegiality of education. Educators' use of learning management solutions has matured significantly. A great deal of 'analogue learning content' was rapidly digitised into learning management solutions, but also shared and reviewed between peers.



When students go to a lecture, they take notes. And it is the notes and additional readings that form the key concept of their understanding... not a recording of the lecture that the teacher made. To be of value to students, we need to create new learning content in other ways.

Simon Lewington

Technical and Further Education (TAFE)
Queensland

The peer review process, while generally informal in most of the institutions interviewed in this study, is likely to become embedded into institutions' behaviours in the future. It will probably evolve into a formal, mandatory practice over time in all institutions, no matter to what extent they embrace hybrid learning.



Bite-sized benefits educators

Breaking down curriculum into granular content focusing on key concepts is not only likely to engage students more effectively in the future where hybrid learning is normalised, but it also provides benefits for educators. The ability to collaborate and mix learning content from colleagues is well understood now. However, it is also dawning that developing learning content in small bite-sized chunks allows it to be updated over time. One of the major bottlenecks for educators moving their content into digital platforms was that it was traditionally a large effort. Once it is broken down into granular components, even if those components are relatively basic (e.g. simply digitising class readings or worksheets),

each component may be updated to a more engaging item separate from the overall curriculum. A worksheet may be transformed into self-assessment, a lecture video into a presentation with embedded narration and tuition, and so forth.

Actions for the future

- Create a formal framework for educational content creation and presentation that delivers education in 'bite-sized' pieces. This framework may need to be mapped back into mandated curriculum frameworks (e.g. national and state curriculums).
- Put in place change management and professional development, so teachers have a sound understanding of the framework.
- Enforce this for all new curriculum resources using peer review and guided templates.
- Ensure that the LMS (or a similar solution) is configured to help ensure all new educational content adheres to the framework.



In Australia, we are building national units of work to support the national curriculum. To support this, we needed to develop high quality programs, courses and content - and they are being collaboratively built across the country by our teachers. This coupled with a formal framework and rubric for structuring all learning content and programs, provides quality assurance on all our materials.

Carolyn Rhodes

OneSchool Global

Lesson 9: Pedagogy gets laser-focused

Prior to lockdowns, the dominant approach to teaching, especially (but not limited to) in higher education, was lengthy instructions, followed by short periods of tuition and then students performing tasks, often in isolation or small groups.

During the lockdowns, the weaknesses of this pedagogical approach were made clear. Lengthy video calls proved not only ineffective for transferring knowledge, but also potentially impaired learning. In a series of case studies of 38 schools conducted by IBRS in 2021, it was noted that students were increasingly disengaging from remote learning video sessions. This was not just a matter of students being exasperated with screen time, but a symptom of a larger issue of traditional learning approaches no longer being perceived by students as relevant.

In contrast, during this study IBRS noted several educational institutions achieving high levels of engagement with remote learning by rigorously adopting a pedagogy consisting of four discrete phases, with the emphasis being on student-led learning. While different educational institutions referred to this pedagogy by different terms, the structure was similar in all cases. It consists of the following:

Instruction Phase:

The instruction phases are short periods of instruction, delivering 1 to 2 (definitely no more than 3) key concepts. These sessions align closely with the bite-sized learning content mentioned previously in this study. The length of time needed for these instruction sessions ranged from a few minutes to 30.

Some institutions are moving to deliver such instruction to a hybrid live/recorded mode, allowing students to timeshift: that is, moving learning experiences to a time that suits the learner.

It should be noted that timeshifting is not the same as a student reviewing learning resources. The content of these two different activities are constructed in different ways, for different results. Instruction sets up core concepts and sets up the students' own investigation of the concepts. Instruction also establishes the expectations - though not necessarily explicitly activities - for the following self-directed/discovery phase.

In contrast, reviewing learning resources takes place in the self-direction phase (see below) and the content is aimed at presenting the key concepts in different ways, using different learning styles and self-assessment.

Self-Directed/Discovery Phase:

During this phase, students engage in materials provided to them by the educator that lead directly from the instruction, as well as exploring the concepts with fellow students, and conducting their own research via curated and public sources. It is vital that the expectations for this phase are well established as part of the instruction phase, though explicit activities may not need to be given.

The self-directed phase can be anywhere from 15 minutes to several hours in length, depending upon the age group and concepts being explored. It is designed to be significantly longer than the instruction phase.

During this phase, the educator moves around the students, monitoring their activities and prompting as needed. Students may also call upon the educator to move into a breakout instruction phase (see below) to gain clarity.

Formative assessments can begin during the later stage of this activity.



There are two considerations here. First is finding the key concepts that you're trying to teach: cutting away all of the junk to find the central purpose and saying it in as few words as possible. Second, displaying this key concept on the screen in such a way that it's obvious what the key point is.

Jarrad Merlo

E2Language

Mentoring/Tutorial Phase:

In this phase, a student or smaller group of students sharing similar questions engage with the educator in a query-response dialogue. Students ask questions of each other and the educator, challenge thinking, look for new insights and garner new ideas. The educator's role is to clarify ideas, identify any gaps in the students' knowledge that may be impacting understanding of the concepts and address them as needed.

Synthesis/Assessment Phase:

During this phase, students will present their new understanding, either through activities that demonstrate understanding, completed projects, worksheets, or formal exams.

The assessment may overlap with the self-directed and mentoring phases, but it ultimately involves a separate outcome: a demonstration of the students' understanding

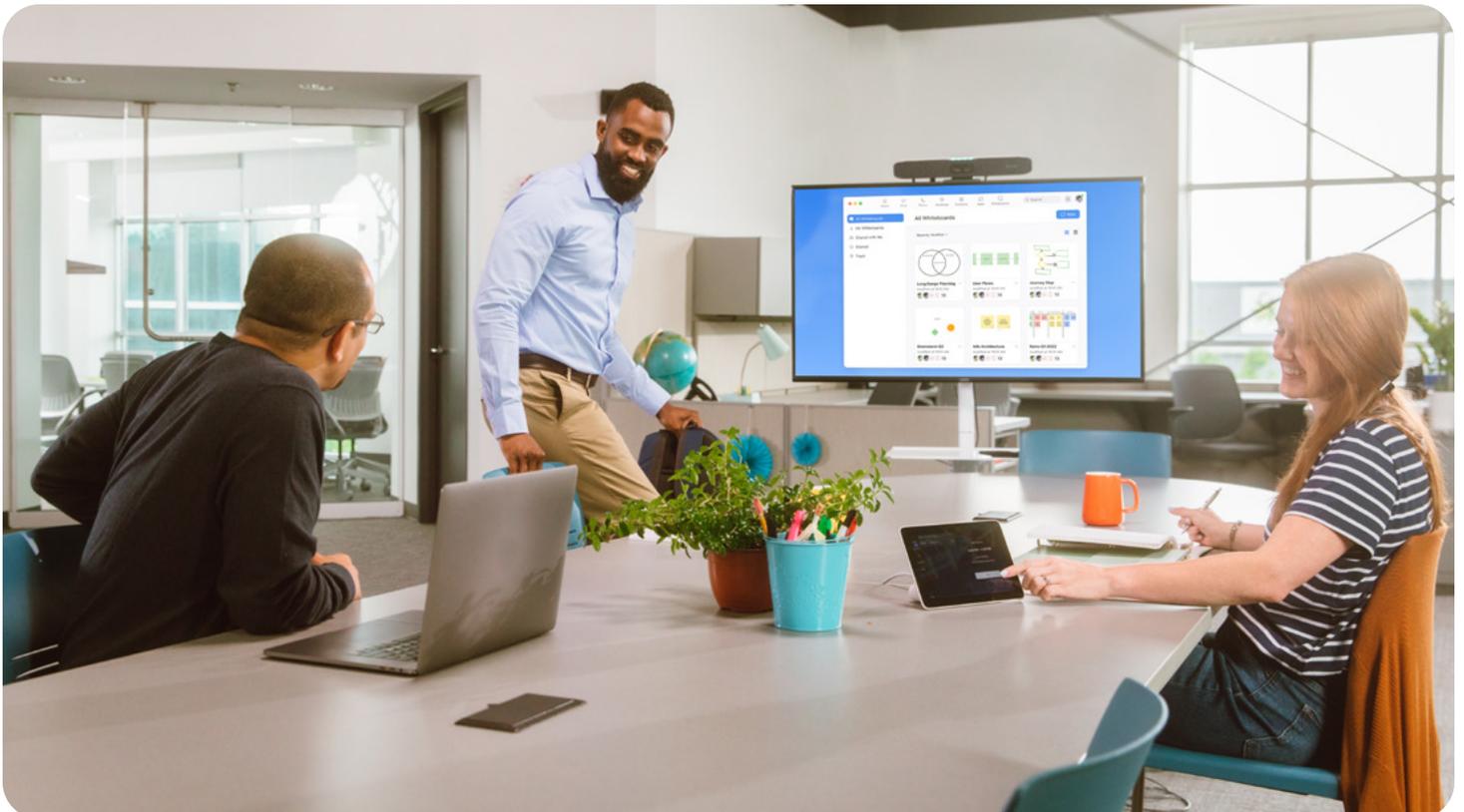
However, in a hybrid learning environment, assessment - especially worksheets and formal exams - is problematic. Students working remotely can easily find ways to improve their outcomes, no matter how much (expensive) proctoring technology is put in place. The challenge of formal assessment is addressed later in this report, but for brevity, hybrid learning demands far greater use of students demonstrating understanding through projects and authentic assessment activities.



We need to move from teaching inductively to deductively. You start by teaching a rule and give an example. Then you move to activities: little things the student can do to reinforce their understanding.

Jarrad Merlo

E2Language



Weren't we already doing this?

In a traditional classroom/lecture setting, the instruction, self-directed, and mentoring phases are often intertwined. However, in the hybrid learning environment, these phases need to be explicit. It is not just the tyranny of distance and the need to reduce screen time. It is the fact that students are in a new learning environment and have a new context.

Remote learning activities need to be laser focused (bite-sized), time-shiftable and digitally collaborative. In addition, the learning content and activities need to be deeply engaging at a personal level, less the student's attention wanes without the support of peers or teacher to prompt them back into action. In-person learning need not address any of the above.

However, the pedagogical structure of hybrid learning can benefit the quality of face-to-face instruction. The key learning here is that the pedagogical approach to teaching during the pandemic has started a long-overdue revolution in teaching. The creation of learning content and how it is presented has changed for the better.

Actions for the future

- Adopt a pedagogical framework that supports the four phases discussed above. The exact pedagogy will naturally need to match the age, style of educational institution and fit with mandated requirements, but in broad terms the key elements of the four stages should be present.
- Put in place change management and professional development so teachers have a sound understanding of the framework.
- Ensure that the LMS (or a similar solution) is configured to help ensure the curriculum supports the pedagogical framework.



There's a lot of things that you can get away with in in-person learning due to eye contact, body language and social cues, but they all change when you're online. So how we present content online needs to be changed. Educators can't simply translate the way they teach in a classroom to an online environment. So it's not just capability in using the technology, but capability in a different method of delivery.

Simon Lewington

Technical and Further Education (TAFE)

Queensland

Lesson 10: Timeshifting education is the new normal, but demands new social norms

During the first six months of lockdowns, many institutions struggled to balance educators' availability with student expectations. Students were applying their previous digital social conventions (communicating with friends via social and instant messaging well into the evening) to their interactions with educators.

As students began to timeshift their educational activities (since instruction phases were becoming shorter and self-directed learning activities became normalised), expectations regarding response times for questions between students and teachers became problematic. While there was an expectation that friends would respond almost immediately to a late-night instant message, educators simply could not meet this expectation.



Early on [during the lockdowns] boundaries became very blurred. We had to work very hard to evolve the [initial] idea of your access to your learning anywhere, any time. We don't want to give mandate to teachers, so we leave it to teachers to work with their students and parents: but they need to communicate the expectations and set routines to manage everyone's time. This has to be done carefully though, as different teachers may have different expectations - so there is still a role for a whole-of-school policy.

Carolyn Rhodes
OneSchool Global



The lesson here is that new expectations had to be established, and boundaries needed to be put in place. Such expectations were not limited to when a student was allowed to communicate with their educators. They also needed to include many other aspects of how students, teachers and other stakeholders would collaborate over time. In short, new social norms were established, that included:

Expectations for when and why students would use different communications methods with their educators and their peers

- email (asynchronous ad hoc)
- eLearning portal messaging (asynchronous structures)
- instant messaging or video to communicate individually with educators or with small groups of peers (synchronous - tutorial/peer-learning)
- group video sessions (synchronous - instructional)
- breakout rooms (synchronous focused/peer reinforcement)

The unpredictability of lockdowns also meant that traditional approaches to class rosters were disrupted. A few institutions used this disruption to rethink how educational rosters would work. Rather than set time slots, they moved to adopt a 'rolling' set of lessons that would progress in order, regardless of the day or time. This way, no classes were missed. The idea here was to create educational programs that mirrored online, staged instruction programs, such as those offered by massive open online courses (MOOCs) or internet-based learning platforms such as Udemy.

Actions for the future

- Ensure the pedagogical framework that supports timeshifting in an age appropriate way.
- Invest in solutions that enable educators to efficiently create educational content that can be timeshifted. Ideally, such solutions should be closely integrated with their collaboration and remote learning solutions, if not one and the same.
- Provide professional development, so educators best determine what educational activities (and thus content) should be timeshifted to deliver the optimal learning outcomes.
- Ensure that the LMS (or a similar solution) supports timeshifted learning (most do).

Lesson 11: Assessment is a trust equation

Remote assessment has already been a concern, especially in late and higher education. While assessing younger students remotely is challenging, due to difficulties in observation and providing worksheets or projects that the students can engage with digitally, the concern with older students is cheating. IBRS noted a significant increase in interest in proctoring technologies during 2020 and 2021, and it appears interest remains strong as higher education continues to support hybrid learning and take advantage of opportunities for expanding their student base to remote students.

However, technical solutions for proctoring will always be one step behind a student who is committed to cheating. Remote assessment is not a tame problem that can be solved solely with technology, but a wicked problem that must be addressed by redesign of assessment tasks and resetting the trust relationship between students and institutions.

Redesign of assessment demands a rethink of instruction and course content. As instruction and content become increasingly bite-sized and focused on only a few key concepts, assessment needs to provide opportunities for students to demonstrate their understanding of how the concepts can be applied or synthesised with prior knowledge.



Backward curriculum design is important. You start with your target [including how you plan to assess the students knowledge]. Then you need to work out the scaffolding you'll provide. Students can then go on their personal learning journeys - students looking up their own information and answers is inquiry. Such inquiry has become a hit for us, because it delivers truly personal learning.

Hugo Indranto

Mentari Intercultural School

Actions for the future

- Proctoring needs to move from monitoring activities, such as watching students while they work, to analytical activities, such as reviewing essays for telltale patterns. However, this must be done in a manner that builds trust between students and institutions.
- Assessment activities should be constructed to demonstrate understanding and capability, rather than just demonstrating knowledge.
- Adopt 'backwards design' principles when planning new course materials. Start with defining how students will demonstrate their understanding and capability (the assessment tasks) and then break up the learning activities to drive towards that demonstration activity.

Lesson 12: Opportunities abound

Expanding the student population

Some institutions, both from K-12 and higher education, see expanded opportunities as a result of changed expectations after the pandemic. The lockdowns not only demonstrated that remote learning can be effective, but accelerated educators' pedagogical and technical capabilities. It also has left students with expectations for hybrid, or even fully remote learning.

In addition, the disruption to normal educational intakes caused by the pandemic saw student cohorts emerging. For example, private language education service, E2Language, reported that lockdowns saw an influx of new, more geographically spread students who would have normally attended face-to-face universities, redirecting their time to improving their language skills. It is likely that even as lockdowns decline and finally stop entirely, these new cohorts will continue to be catered for in new ways.

Universities have realised that the move to digital learning content and pedagogically appropriate online instruction enables a significant expansion of students, without the need for expanded physical facilities. For example, Arizona State University now boasts 160,000 students, with only half being on-site. This was made possible by leveraging online-only and hybrid learning capabilities, developing learning content with a digital-first mind-set, and by adopting a pedagogy that was appropriate for learning in a modern context. Just as work is going hybrid, so too is learning.

The possibilities for expansion are not just limited to higher education. During the lockdowns, K-12 schools discovered opportunities for students to attend class even when in other cities or countries. In some cases, schools even realised there was potential to use hybrid learning to make students' lives easier: reducing the number of days in face-to-face classes with hybrid learning programs.

In addition, private K-12 schools are now recognising that the use of digital services plays an increasing role in school selection. During the pandemic, schools moved to virtual parent-teacher sessions, and some also added advice and training programs to parents to assist with the home learning process. The success of these programs is likely to see them remain, even as we return to face-to-face classes. In addition, a few schools allow parents to have interviews with teachers and the principal in 'town hall' online events.



With remote learning capabilities [and pedagogy], schools are able to tap new students. Previously, our students came from the general vicinity of the school in Manila. Now we're able to tap students from all over the Philippines. We've even got students [of expats] from overseas, such as the United States, India, South Korea, and the United Arab Emirates.

Joseph Ray Garrido

La Salle Green Hills

Several institutions in this study pointed out that online-only or hybrid learning can be significantly less costly than traditional face-to-face instruction. In the past, this was not the case: expensive video communications solutions and the costs of creating and consuming digitising learning content was prohibitive. However, the lockdowns demonstrated that the costs associated with such have been reduced to a point as to make them minor considerations for the school, and relatively low for students and families. And the lockdowns forced a great deal of 'heavy lifting' in terms of investments for both technology and content, which can now be drawn upon.

Expanding the teaching population

A few institutions suggested that the move to remote learning has also bolstered the potential for remote teachers. However, remote learning and remote teaching are not the same.

Remote learning is where students are remotely connected to one or more teachers that are located within their local area - it's a direct analogy of the traditional geocentric school system.

Remote teaching is where the teacher, often with niche or specialised knowledge, may be located anywhere in the world, and dials into students, be they in a classroom or remote themselves. It is the opposite of the traditional geocentric school system.

The lockdowns demonstrated that both students and teachers could be effective when engaged remotely. While most attention has been paid on remote learning, some institutions now recognise that remote teaching may open new avenues for expanding their educational offerings, changing the quality of teachers through specialisation, or even just attracting teachers with the right disposition for remote teaching.

However, it was noted that adopting remote teaching may be hindered by government policies. For example, teacher certification varies by jurisdiction, and it is not clear how this plays out in a world where teachers and students may be located anywhere.



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Joseph Ray Garrido

La Salle Green Hills

Advanced courses linked to life

Opportunities existing to link education deeply into career paths. With changes to how educational institutions think about delivering education, some high schools and colleges have begun to call upon industry experts to host remote classes with students, regardless of the students being in class or at home.

In particular, some technology companies are targeting students in high school with training programs aimed at securing talent in a highly competitive market. Some organisations - including smaller, local specialist firms - are providing guest lecturers as a way to entice students into their profession.

Some institutions provide advanced placement courses for gifted students. In cooperation with industry, local universities or specialists, schools brought in experts for these advanced sources by leveraging the same technology that enabled remote learning.

Actions for the future

- Institutions should consider opportunities to expand their educational reach. While not all schools need to attract new students. However, now that remote learning has been proven to work effectively, new options exist to offer niche classes, work more closely with industry and external experts, or even bring in role models for students. Schools should explore these options and experiment.

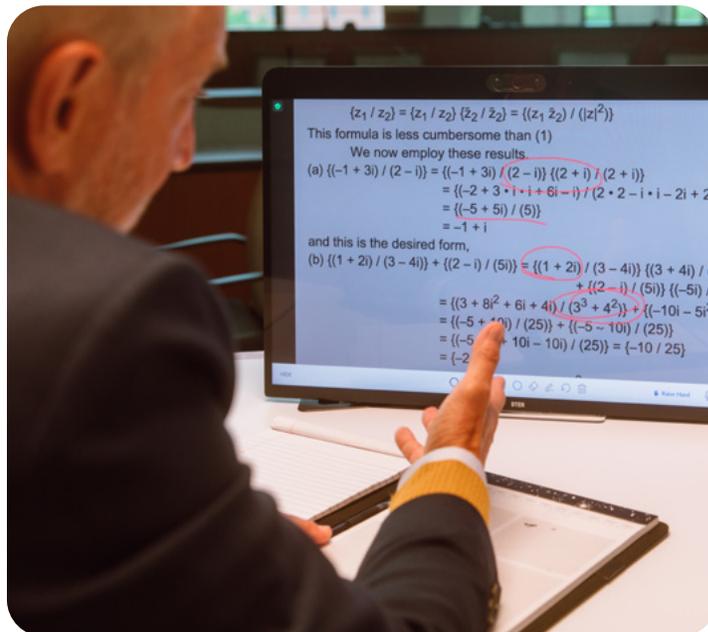


Lesson 13: Build a technology ecosystem

IT's connection to learning

The rapid reliance on digital services to provide learning during the pandemic also reveals a persistent problem that most educators have simply been working around for decades - the poor interoperability between the various technologies that support teaching and learning as well as the institution administration. In the past, educators simply ignored the LMS for all but essential or mandated activities, since it was not well-connected to their day-to-day classroom activities, and performed assessment via personal records to avoid having to manually load them into specific solutions that were sometimes very disconnected from the learning process. Student collaboration tools were likewise disconnected from the learning environment.

With the lockdowns, digital delivery was brought front and centre, and so too was the pain of attempting to bring all the disparate education solutions together, without teachers having to spend hours on admin.



You have to have a technological ecosystem. The question must always be, 'What technologies do we need to support pedagogy?'. The ecosystem needs to be very carefully thought through, so it delivers a reliable learning environment.

Carolyn Rhodes

OneSchool Global

Most of the education providers interviewed in this study stated that integration between educational technologies is now a paramount issue to be resolved. Institutions that took a 'ecosystem' approach to technology fared better than those that focused on individual solutions to meet specific teaching issues.

For most institutions, the heart of the ecosystem is the LMS. All other capabilities need to integrate with the LMS: from curriculum development solutions and student management solutions (SIS) to collaborative learning tools, assessment solutions and student portals.

Does ecosystem thinking hinder innovation?

The need for an integration ecosystem can potentially hinder innovation by putting in place bottlenecks for the selection and adoption of new technologies. In some cases, the LMS itself does not reinforce (or even support) the desired pedagogical approach. In other cases, core systems are not easy to integrate or the difference in user experience between the solutions is so great as to make them functionally unworkable for busy educators.

Therefore, a balance is needed between allowing experimentation with new technologies and practices, and leveraging the existing ecosystem.

There are different approaches to striking this balance. Larger institutions and education networks can take a 'shared service' approach, where core technologies are provided centrally, while secondary services and classroom-level innovations are left to individual schools, faculties and teachers. The Australian Catholic Education Network (CENet) is one such example of this model. Monash University's shared service department goes one step further, and provides all technologies to not only the facilities, but also to various university-led ventures.



We have a central shared service mode. This means that whatever solutions our stakeholders need - be they a blend of products or could be internally built, purchased externally or even externally hosted - is carefully evaluated. We want to make sure that any new technology will meet as many needs as possible.

Matt Carmichael

Director - Support Services and Engagement & Shared and Campus Services, Monash University

Whatever model is selected to support the introduction of educational technology, it needs to be adept in evaluating new educational software and services from the perspective of how it will interact with the greater ecosystem. This is a vital governance function and must include educational practitioners (e.g. lead teachers, curriculum specialists) and technical leads that can communicate the possibilities and limitations of any proposed innovations. There will be tension between the members of this governance group due to differing expectations and goals.

The key to reducing this natural tension is for the technology leads to position themselves as advisors who seek not to block suggestions from the educators, but to help them fine-tune their ideas to be laser-focused on teaching outcomes. Rather than rejecting the introduction of a new solution out of hand because it does not fit the ecosystem or has privacy or security concerns, the technology leads should always put forward alternatives.

For example, during the pandemic several organisations discovered that recording and saving lessons presented via Zoom and other video conferencing solutions was resulting in significant challenges. Recordings were taking up significant (cloud) storage when loaded into LMS solutions, and such storage was costly. In addition, the technology teams were noticing that proliferation of long (60-90 min) videos was not resulting in better student engagement - quite the opposite.

Working through the governance function, technology leads explored alternatives and in several cases found that specialised educational video catalogue technologies - namely Panopto - in conjunction with the LMS, resulted in both better playback and far lower cost for storages. The technology leads also provided metrics to the teaching teams that clearly demonstrated the engagement benefits of shorter, sharper video recordings over long-form video lessons. In summary, they demonstrated a 'better way' to leverage video instruction, while also reducing costs and maintaining a unified ecosystem of solutions.



The big change was that every student got a laptop. That meant every student had a camera. So we could swap out Polycom systems for Zoom Rooms. By itself, that did not change pedagogy. But coupled with a framework for self-directed learning, it enabled us to be less teacher directed, with less classrooms. So this has enabled us to transition from a traditional classroom approach to students learning how and where they wish, within the larger learning environment.

Jeff LLoyd
OneSchool Global

Leveraging consumerisation of technology in the ecosystem

Consumerisation of technology has been a trend for 20 years, but its full impact has not been felt in education until the pandemic lockdowns. With remote learning, education networks had to leverage whatever technologies students had in homes: from internet connections to desktops, laptops, mobile phones, monitors, TVs, cameras, and peripherals.

Institutions quickly found weaknesses in their existing technology ecosystems in terms of working with the technology students had on hand. This was a matter of both technology ecosystem design and equity (which we explore in the following lesson).

Institutions quickly moved off well-established 'enterprise-grade' solutions where these would not readily support multiple devices and form factors. The sharp rise in the take up of Zoom and other video collaboration solutions is evidence of this. But so too was the huge increase in the use of real-time collaboration services in which students and teachers leveraged innovative ways to create a feeling of classroom cohesion. The use of products such as Google Docs, Slack, Microsoft Teams, and Facebook, all saw rapid uptake, though it should also be noted that many institutions are now looking back at some of these selections in terms of student privacy, security and mental health.

The support of consumer technologies used by students (and parents) should be considered a primary consideration for technology ecosystem investments by institutions. This is not just a matter of lowering the overall cost of technology investments (which it can), but also enabling students to learn in their own way, and with their real-world contexts. It should be considered part of creating an authentic learning experience.

Specialised vs consumerised solutions

The above does not imply that specialised technologies are defunct in learning environments. Quite the opposite: the investments in the ecosystem must align to support the pedagogy of the institution.

For example, in higher education, the development of next-generation learning spaces relies upon the use of sophisticated audio and video technologies, not just for recording and broadcasting lessons, but to ensure all students within the spaces are included.

Prior to the pandemic, Monash University was investing heavily in new learning spaces that changed the relationship between the educator and the students. Rather than a lecturer standing at the front of a hall, they could be placed among the students and present in a more collaborative and engaging manner. Specialised microphones and audio hardware would be able to ensure that the lecturer's words were audible to all students, no matter where they were located in the learning space, but also that the students' voices could be heard. Cameras with smart tracking technologies could follow the lecturer, and work on whiteboards could be captured and placed on multiple screens (and broadcast) to all participants.



The university has 350 learning spaces with screen recording/streaming facilities in 218 of them with basic chat feedback interaction. At the start of the pandemic only 19 of these spaces had cameras. Now 120 spaces have cameras for remote students to actually see the academic and in venue cohort and we've embedded Zoom-like functionality to get that more collaborative hybrid learning.

Trev Wood

Manager, Educational Technologies
Monash University

Such next-gen workspaces require significant investments, but are highly engaging to students, enable new approaches to teaching, and differentiate the university by offering both teachers and lecturers a highly attractive learning environment.

However, not all educational networks have the budget nor space to create such environments. Educators now have far more experience in leveraging considered technologies and this expertise is working its way back into classrooms. Furthermore, now that educators are more experienced, some institutions are accelerating the move from traditional 'command-and-control' style of classrooms, to newer collaborative learning spaces.

Actions for the future

- Put in place a governance team to ensure investments in technology will easily integrate. This is not just a matter of the technical ability for different solutions to share information. It is more a matter of how processes can be streamlined, especially for teachers.
- Consider putting in place a formal innovation framework and fund so that all staff (not just technologists) can raise ideas for improving administration or teaching and learning activities, have these evaluated and potentially put into practice.
- Create a program to share new, innovative practices and solutions.

Lesson 14: Equity of access still matters

IT's connection to learning

Despite decades of discussion regarding the 'digital divide' and significant investments by many governments around the region to provide schools with better connectivity and students with devices, COVID clearly illustrated that a lot more has to be done to close the gap.

All educational institutions interviewed noted that some students struggled with connectivity, or lacked devices capable of enabling full engagement with online learning. For some institutions, this was a matter of geography and national investment in infrastructure. For others, it was a matter of socio-economic inequity.

While the scope of this study does not allow for a detailed analysis of the system of education inequity resulting from the digital divide, some interesting short-term gap measures were noted as institutions attempted to keep their most disadvantaged students engaged.



The problem with mobile connectivity is that it's quota-based. You get, say, five gigabytes of data. But an hour-long Zoom classroom session will use up one-and-a-half gigabytes of data. So the students complain they simply can't afford to use mobile data: they really needed a subsidy [to keep learning during the lockdowns].

Mukhammad Andri Setiawan

Universitas Islam Indonesia

For students in remote locations, internet connectivity proved to be too unreliable for daily remote learning. In these cases, mobile phone data networks were often the fallback measure. However, mobile data is considerably more costly and is most often sold with a limited monthly allowance of data.

Given that an online class can demand several gigabytes of data, students were finding themselves running through their data allowance quickly, and then either not being able to engage in class activities or having to pay hefty add-on charges. Some educational networks resolved this by providing in-need students with mobile data SIMs and taking on the costs (which they could drive down due to bulk-buying negotiations). Other education networks made changes to what they delivered digitally to save bandwidth: shorter, smaller videos, compressed learning content, etc.

Beyond simple network monitoring

COVID placed global stresses on public communications infrastructure, and revealed that not all cloud-based technology solutions can deliver consistently and globally. When selecting cloud-based (SaaS) solutions, institutions need to be cognisant that the vendor's services may be routed differently over time. For mission-critical applications - such as video collaboration and access to learning materials - monitoring of actual end-to-end performance is needed.

For example, Monash University was able to quickly ramp up its delivery to its Chinese students. However, since China went into early lockdown, the secure networks within the country were unable to deliver the performance needed to provide students with reliable learning experiences. In particular, video performance was suffering.

Actions for the future

- Governments and institutions should prioritise equity of access for digital education. This may be in the form of short term grants to educational institutions so they can support disadvantaged students, or providing direct aid to students.



The changing user habits in China meant the network couldn't perform and videos would not load. After testing, we discovered that the two different video platforms we used performed differently: one platform performed far better than the other, possibly due to vendor routing that was out of our control. So we had to adjust how and where we placed our video learning content.

Trev Wood

Manager, Educational Technologies,
Monash University



Lesson 15: Embrace continuous change

The final lesson from the last few years is that education can change quickly when needed.

Countless reports over the last three decades have criticised the slow pace of change in education and just as many policies have been put forward. However, the pandemic forced every segment and every person involved in education - from teachers and administration to the students and their families - to deal with rapid changes. Interviews from this study strongly suggest the rate of change was not unbearable, and has resulted in stronger, more flexible education that is more aligned with the technical and social contexts of today's learners.

From a technical perspective, the rapid uptake of cloud-based solutions in response to the pandemic means that education networks have moved significantly towards a 'continual upgrade' cycle.

Many of the cloud solutions adopted during the pandemic (from collaboration tools to LMS) are based on subscription licensing and upgrades are provided with little or no involvement by their clients. This frees up educational technologists to spend less time on 'keep the lights on in the data centre', and more time on looking for new innovations and solutions that fit the ecosystem and help support pedagogy.

It also ensures that new innovations are deployed across multiple education institutions and networks simultaneously, which has huge potential for unlocking cross-institutional efficiency and potentially unlocks new options, such as life-time learning journeys, microcredentials, accelerated learning and more.



Universities are generally and historically risk averse. Now, we accept that technology is regularly changing, and we are adapting and introducing new capabilities faster. Everyone is more responsive. However, I think we're seeing change fatigue now because faculty and IT teams spent the last two years running and changing on the fly. But our ability to change quickly is here to stay.

Matt Carmichael

Manager, Educational Technologies
Monash University

Actions for the future

- Institutions should look to migrate to cloud-based applications with web clients. For larger institutions, the goal should be to 'hollow out' on-premises environments and move to continual upgrade cycles.

Conclusion

This study clearly shows that education has undergone a transformational experience during the past two years. Many of the lessons identified in this study were pre-existing conditions: challenges education has been working around for decades. The pandemic forced educators to leverage technology and accelerated the ongoing digital transformation across the region. It also demanded that content and pedagogy be uplifted to modern contexts.

Some institutions were well-prepared for the rapid changes and barely noticed the shift to remote learning. Others struggled initially, but were able to adapt.

The challenges that remain revolve around equity of access to digital learning (which is tied to other socioeconomic disadvantages for students) and the long-term impact of screen time. The equity issue requires public policy and targeted programs of investment to alleviate. The screen time issue demands greater research, but also careful redesign of learning content, pedagogy, authentic assessment tasks, and more.

With education returning to in-person learning, there is no doubt that more lessons will emerge. Some of the very valuable educational practices that arose in response to the lockdowns may revert back to traditional approaches. For example, harnessing parents in their childrens' learning could very well return to the low levels of engagement seen previously. Losing sight of such lessons would be a tragic lost opportunity.

It is up to us all - educators, policy-makers, administrators, technologists, students and parents - to ensure the lessons we've learned during the pandemic are taken forward and acted upon.

Appendix

OneSchool Global

OneSchool Global is a truly global school, with over 120 campuses in 20 countries. Their self-directed learning model places students at the centre of all that they do. Their in-house Teacher Academy provides teachers with the training and skills that will make them highly capable and competent in teaching in a digital world.

La Salle Green Hills

La Salle Green Hills is a K-12 private catholic school in Mandaluyong City, Philippines run by the Institute of the Brothers of Christian schools. The school opened its doors in 1959 as an all-boys school and in 2020 as a co-educational school. It is guided by its values of Faith, Virtue and Community in developing future leaders who contribute to society and nation building.

Technical and Further Education (TAFE) Queensland

TAFE Queensland is the largest, most experienced training and educator provider in the state. They deliver practical, industry-relevant training across a range of industries from entry-level certificates to bachelor degrees, at more than 50 locations in Queensland, Australia.

Universitas Islam Indonesia

Universitas Islam Indonesia (UII) was founded on July 8, 1945. With more than 70 years of experience, UII is committed to creating future leaders through superior education programs based on Islamic and national values.

Appendix

E2Language

E2 is a teaching and learning company powered by a world-class platform that is changing the online learning experience. Their hybrid learning methods combine the best of traditional learning - real-life teachers, fast feedback and one-on-one attention - with digital delivery, AI and 24/7 accessibility to provide a learning experience that can take place anytime anywhere.

Mentari Intercultural School

As an SPK-Accredited School (Satuan Pendidikan Kerjasama), Mentari Intercultural School is authorised to offer the International Baccalaureate curriculum and the Cambridge curriculum side by side with the Indonesian National curriculum, providing all students with a globally-recognised, reassuringly independent, and seamless route to success - both in and out of the classroom, at university and beyond.

Monash University

Monash University is Australia's largest and most international university. Its extensive educational offering, delivered via our 10 faculties, includes undergraduate, postgraduate and research courses. Monash is a research-intensive university, known for some significant and lasting discoveries that have delivered impact beyond the academic community. The university is home to a range of world-leading facilities and technologies, giving it wide-ranging capabilities across many fields, sectors and industries.