

The hybrid classroom: the future of the smart campus



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Introduction

Technology has changed many aspects of society over the years, but education has remained largely resistant to disruption¹. While universities in more advanced nations have been leveraging virtual solutions to a certain extent, most still adhere to a largely traditional format. Students attend classes, take tests, and submit assignments like they always have: in the classroom².

The Covid-19 pandemic has changed all that. Infections, social distancing measures, and school closures have affected nearly 1.6 billion learners³ all over the world. The impact is harsher on lower- to middle-income countries, where 99% of students are affected by school closures. Studies have shown that missing out on even one term of education could have serious long-term consequences⁴.

With uncertainty over how and when the world will ever go back to a pre-Covid state, institutes of higher learning (IHL) have harnessed technology to seek new avenues for educating the youth. Remote or distance learning, the method of study⁵ where students and teachers do not meet in a classroom but over the internet, email, or other broadcast mediums, has become the new normal.

While these changes have been rattling, they provide a glimpse of the future of education—one that is more inclusive and tech-enabled. This begs the question: *what will classrooms look like when the pandemic is over?*

For many IHLs, the future of the classroom will be a **hybrid one**. With the unequivocal experience of face-to-face learning combined with the convenience and accessibility of distance learning, students will be able to enjoy more personalized and crisis-proof education.

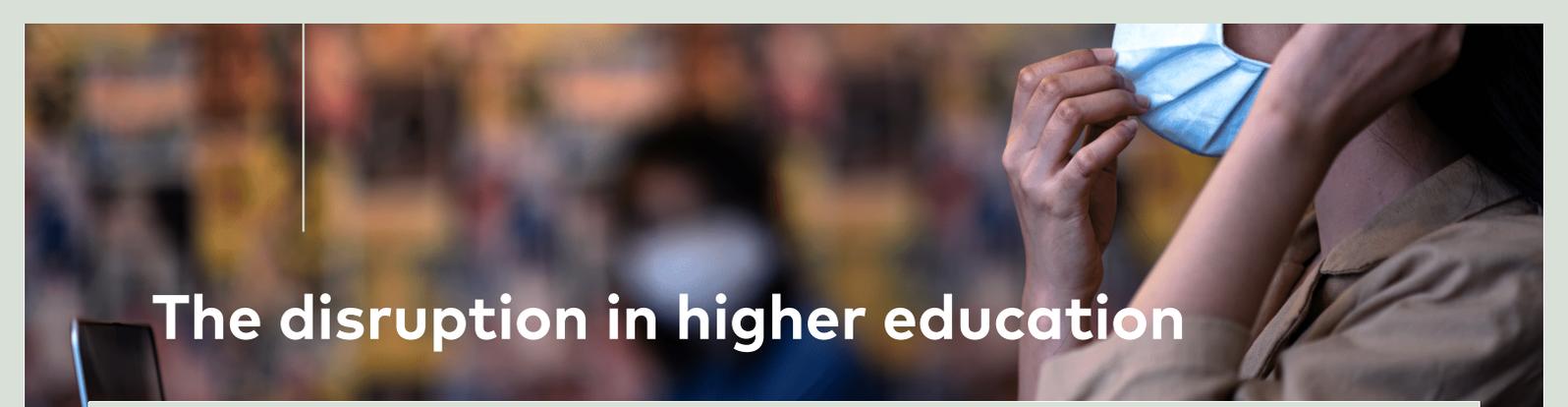
¹ The Edtech opportunity

² Blended learning will reshape the future of learning

³ Policy Brief: Education during COVID-19 and beyond

⁴ The long-term consequences of missing a term of school

⁵ What is Distance Learning? Definitions, Examples & More



The disruption in higher education

The pandemic has exposed gaps⁶ in traditional education systems. Lockdown measures and social distancing requirements have made face-to-face classes infeasible. With little to no alternatives for institutions to maintain classes, schools and universities had no choice but to forego classes indefinitely⁷. The consequences of this are dire: an entire year of learning could result in a cohort of students lagging behind⁸ in their education.

In the face of such a crisis, schools and universities had only a few options: either welcome students back on campus or teach remotely for the foreseeable future.

The first option is feasible for places where Covid mitigation has been successful. Vietnam, for example, was able to contain the spread of infections early on. While its Southeast Asian neighbors were enforcing stringent lockdowns, Vietnam was welcoming students back to school by May 2020⁹—just over one month after its first national lockdown. Students themselves felt safe enough¹⁰ to enter classrooms, but safety measures¹¹ like temperature checks, face masks, and social distancing were still enforced.

For other countries where Covid was still an urgent threat, remote learning became the only alternative. Depending on the situation, countries implemented different

forms of remote learning. In the Philippines, for example, the government enforced radio and television-based instruction¹² to support students with no access to the internet or laptops, tablets, and cellphones. Families sometimes took the matters into their own hands and began homeschooling¹³.

Meanwhile, learning institutions in countries with more mature digital infrastructures like Singapore and South Korea¹⁴ took a hybrid approach to education, mixing face-to-face education with some form of distance learning. This transition to digital was easier in these countries, as learning institutions had already integrated some form of technology and remote or self-learning programs into their classes.

The National University of Singapore (NUS), one of Asia's top-ranked universities, rolled out online and on-campus classes¹⁵ in mid-2020. This decision was made out of necessity since some NUS students were out of the country and were unable to attend classes. Some Singapore-based students were also worried about infecting others or getting infected themselves.

However, the NUS is a firm believer in the importance of face-to-face education, and so chose to resume physical classes with the proper precautions.

⁶ Meeting the Challenges of the New Normal in School Education: An Online Workshop for Policymakers, Teacher Educators, and School Leaders

⁷ Edtech startups help fill learning void in Southeast Asia

⁸ 'Privilege of the Rich'

⁹ Emerging COVID-19 success story: Vietnam's commitment to containment

¹⁰ Vietnam kids back at school after 3-month virus break

¹¹ Feature: Students in Vietnam head back to school with COVID-19 precautions

¹² DepEd secures NTC's support for TV, radio-based education

¹³ Education in the face of a pandemic: Should parents shift to homeschooling?

¹⁴ What are countries doing that already use remote learning extensively? What can we learn from them?

¹⁵ Commentary: How ready are Singapore universities to start the new term as COVID-19 rages on?



Why hybrid is the future

Like NUS, the pandemic has paved the way for an online-offline or hybrid learning environment for many educational institutions. While hybrid learning and blended learning are often used interchangeably, there's an important distinction¹⁶.

With **blended learning**, online learning solutions are used as a complement to in-person classroom learning¹⁷. That means the same students will be learning from a curriculum that blends online and in-person components. For example, students could be attending classes in-person but taking and submitting assignments online. Think of it as a multimedia approach to education.

Hybrid learning, on the other hand, is an educational approach¹⁸ where some students participate in person and others participate online. Educators will be teaching both types of students at the same time through technology like **video conferencing**.

Hybrid learning does not look the same for every school. Some may adopt synchronous or asynchronous learning¹⁹, meaning students either learn at the same time or at their own pace. Others may take a rotational approach, like NUS, where students take turns going to class and learning online. IHLs are tasked with finding the balance that works for them and their students.

¹⁶ Hybrid vs. Blended Learning: The Difference and Why It Matters

¹⁷ Why Hybrid Learning Is The Future Of Education

¹⁸ What Role Will Hybrid Learning Play in the Future of K-12 Education?

¹⁹ Synchronous vs. asynchronous learning: what's the difference

Where learning meets technology

Hybrid learning will always leverage technology²⁰ to some degree to reach those that are not physically present in the classroom. Some educators have set up multiple video conferencing cameras in the classroom to give online students a more dynamic learning experience. This also gives teachers free range of movement so they don't have to worry about being in frame. Having strong audio capabilities is also critical, since this is how students tune in to lectures.

The marriage of learning with technology will undoubtedly impact the physical facade of schools. This is an opportunity for IHLs to reimagine the future of the campus—more than just installing cameras, microphones, and better Wi-Fi, how can schools and universities harness technology to optimize and ensure continuous learning in the future?

An emerging trend is the “smart campus”²¹—a tech-enabled environment that drives touchless, frictionless, and connected learning communities. The ideal smart campus will leverage the latest innovations in education technology (edtech) to improve the quality of education and learning experience among students and staff. And more importantly, it will serve as the foundation for hybrid learning.

The Hong Kong government is already making strides to solidify technology's role in schools and universities. It recently allocated HK\$165 million²² (US\$21 million) to support the strategic development of virtual teaching and learning (VTL) in the medium-to-long run. Universities are free to use the funding to enrich the overall education experience of virtual learning, explore new strategies and business models, and promote the integration of VTL into practicums and on-site training.

Benefits of hybrid learning

There are many advantages to hybrid learning, especially in a post-Covid world. The biggest opportunity is the ability for educational institutions to provide more personalized learning.

Much of the focus in the past has been on the classroom experience²³—students attending the same lectures and learning at the same pace. Missing out on a class meant missing out on an important topic or even a surprise quiz.

Technology-based remote learning allows for inclusive spaces that allow students to learn beyond the campus, at their own pace. This represents a shift from “teaching culture” to “learning culture.” Through remote learning, students are empowered to learn for themselves in flexible and collaborative ways. Hybrid learning also gives students the ability to choose what, when, where, and how to learn.

For educators, integrating technology with lessons offers them access to individualized, real-time data for each of their students. It can help them think outside the box in terms of how they can best engage and impart knowledge to their students. And it means they can spend less time designing the content component of their subjects, and more time around the actual learning experience. Not to mention teachers can also use technology to automate tasks, such as calculating grades.

²⁰ What Role Will Hybrid Learning Play in the Future of K-12 Education?

²¹ Smart campus—A sketch

²² UGC and QAC to drive long-term development of virtual teaching and learning

²³ Schools after COVID-19: From a teaching culture to a learning culture



The problem with 100% remote learning

Remote learning offers more opportunities for education, but online learning alone may not be the best solution.

For one thing, many educators still believe in the merits of face-to-face education²⁴. It provides a designated space for learning—one that's free of distractions—and allows students and teachers to interact and collaborate in a shared environment. Students can solve problems through peer-to-peer or tutor-to-peer discussions, where information exchange is straightforward. In an online setting, collaboration is limited and students are encouraged to learn on their own, otherwise be proactive about reaching out to peers and educators.

On-campus education also gives students the quintessential "college experience" and social benefits. An international student who is paying hefty college tuition fees to attend a reputable university would probably not be satisfied with remote learning alone. They would also want the network and connections that can only be achieved on-campus.

Lastly, there are courses that do not translate well online²⁵. Science and engineering or medical courses, for

example, require lab work, equipment, and hands-on training. With the current technology, it would be infeasible to simulate these in a remote setting.

The combination of remote and in-person learning, however, makes education more accessible. Not all students have the resources to acquire digital tools like mobile phones or tablets, and data is an additional expense on top of tuition fees. And even if they did have the resources, some students may not find the online learning experience to be worth it.

South Korea, for example, has one of the best IT infrastructures in the world²⁶, which has allowed it to transition to online classes smoothly. The South Korean government has also increased the capacity for e-learning platforms²⁷ and created teaching programs for educators to transition to online learning. However, students have expressed dissatisfaction over their online courses with many of them considering taking a leave of absence²⁸ because of the low quality of the classes and the tuition fees.

Hybrid learning then becomes a viable mid-point for universities to be more accessible and effective as a learning institution.

²⁴ After the Pandemic: Reimagining Education

²⁵ Online Classes vs. Traditional Classes: Pros and Cons

²⁶ 2020 United Nations E-Government Survey

²⁷ The future of online education: lessons from South Korea

²⁸ "Are you reading PPT again?" Students who are amazed at poor quality remote classes



Key challenges for institutions of higher learning

While hybrid learning sounds simple enough in theory, it takes more than just hosting online classes to fully realize its potential. There are certain factors that IHLs must first consider before they can successfully implement it.

One factor is tools and infrastructure²⁹. Hybrid learning is founded on technology and digital infrastructure. Having the infrastructure in place makes the transition to hybrid learning much easier. Schools and universities that had an “online forward” approach to teaching and learning have an advantage in this sense. For example, Taylor’s University in Malaysia³⁰ states that each of its courses has its own virtual site, allowing for online engagement for assessments, assignments, peer support, and communication with peers and lecturers.

But not all universities are equipped with the hardware or software to make remote learning possible. And neither can all students afford the investments in new mobile and learning devices.

A country’s digital infrastructure also plays a role in connectivity³¹. Countries like Indonesia, Thailand, Myanmar, and the Philippines do not have the connectivity to power remote learning in all parts of the nation. Countries with significant internet infrastructure in place have important

advantages when it comes to online education. However, just having the infrastructure is not enough, as the situation in South Korea has revealed.

The other factor is the readiness for both teachers and students to adopt hybrid learning. After centuries of teacher-students classroom settings, it becomes a challenge to step out of traditional perceptions of education.

Many teachers also tend to be older³² and not necessarily equipped³³ for hybrid learning technology. When Covid-19 came along, many universities across Asia went online, but few instructors took the time to change their instructional methods³⁴ to suit the new medium. They took the same lectures and delivered them to a webcam instead of a room full of students.

Hybrid learning requires teachers to think outside of the box. Some experts advise designing the curriculum and the lectures as if it were for a fully online class³⁵, and then think of the in-person component as an enrichment to the core work. This minimizes the risk of disengaging remote students, and still offers flexibility within the physical classroom. First-time hybrid educators will need to find ways to translate their traditional teaching experience to online teaching.

²⁹ COVID-19 in East Asia: How the Region’s Higher Education Systems are Addressing the Crisis to Adapt to the Future

³⁰ Learning mustn’t stop with Covid-19

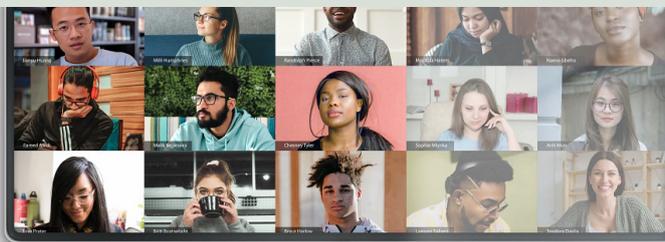
³¹ Lack of internet access in Southeast Asia poses challenges for students to study online amid COVID-19 pandemic

³² Education at a Glance 2017: OECD Indicators

³³ What Role Will Hybrid Learning Play in the Future of K–12 Education?

³⁴ Commentary: How ready are Singapore universities to start the new term as COVID-19 rages on?

³⁵ Teaching: How To Engage Students in a Hybrid Classroom



The smart campus is the way forward for schools and universities

To make hybrid learning work for both universities and students post-pandemic, educational institutions need to rethink instructional design in ways that can best integrate technology with lessons, train teachers and instructors in hybrid learning approaches, and invest in digital infrastructure and new technologies.

These three things will essentially reshape the curriculum as well as the physical design of the campus. Enter: the "smart campus."³⁶

The evolution of new technologies has improved the quality of education³⁷ and the campus experience over time. It has also enabled IHLs to maintain classes in spite of disruptions. Had the pandemic arrived 30 years sooner, students would not have had the same opportunities for learning as they do today.

The smart campus will not only accommodate hybrid learning, but also future-proof the classroom from unexpected crises, like Covid-19. Here is what campuses may look like in the future:

³⁶ Smart campus: The next-generation connected campus

³⁷ Smart campus—A sketch



Touchless classrooms

Learning from the pandemic where students and teachers have to adhere to social distancing rules and minimize touch points when meeting physically, educational institutions will need to invest in the proper safety precautions. More than just temperature checks and alcohol dispensers, IHLs can go the extra step and invest in touchless classrooms.

Equipping classrooms with sensors to automate room control functions like doors, air conditioning, and light switches can greatly minimize the risk of spreading the virus. There are even sensors that can tell when a room is being occupied, and can automatically turn on the relevant technologies.



Centralized control

In conjunction with these sensors, classrooms can also be equipped with software that can centralize all these functions into one seamless user interface. A growing trend is bring your own device (BYOD) systems to facilitate touchless room management.

As the name suggests, users can use their own devices such as their personal mobile phones, tablets, or laptops and connect with centralized systems through bluetooth to manage a shared space. Teachers can do anything from adjust the temperature of air conditioning to dimming the lights in the classroom without having to interrupt the class. This would also minimize hardware investments for IHLs.



High-quality video conferencing

Video conferencing tools play an important role in the hybrid environment, since there will be a mix of students learning in-person and online. The smart campus will consist of classrooms fitted with high-quality video conferencing tools like video carts to make it easy to conduct online classes from any angle. Universities can also invest in tools that can make online classes more engaging, like whiteboard software that lets online learners clearly see what teachers are scribbling on the board.

It's not enough to use Zoom or Microsoft Teams, having the proper audio-visual tools can potentially increase student engagement³⁸ and opens the doors for more collaborative activities. For example, IHLs can equip classrooms with screens that display online students. These online students can use the different features available on Zoom and Microsoft Teams platforms, like "raise hand"³⁹ if they have questions, "breakout rooms" to work in groups, and play online games with the class. These tools make educational content more engaging and accessible to all.

Higher education campuses are epicenter for activity, and the physical infrastructure of it will impact the overall quality of education both within and outside of campus. A smart campus leverages a variety of smart technologies to improve education and protect it from crises.

³⁸ Lessons From a Summer of Teaching in a Hybrid Classroom

³⁹ How to use the 'raise hand' feature in Zoom to notify the meeting host that you'd like to speak



Enhanced operational efficiency

The smart campus should have improved operational efficiency and effectiveness, especially when compared to a traditional classroom. It should feature infrastructure improvements that can sustain interactive online learning models as well as improve communication among staff in universities and schools.

Cloud-based **remote management** tools can also aid in this regard. The data gathered through centralized software integration can be turned into workplace analytics. IHLs will be able to understand how rooms and systems are being used, including occupancy and functionality, which can then be translated into actionable next steps.



Interconnected systems

Having a central database to control and monitor all of these different technologies will be vital in managing the smart campus. Especially in light of the pandemic, managing the flow of people⁴⁰ within the campus will be more important than ever. IHLs will need to keep track of space utilization, altering class schedules, and maximum capacities of certain spaces like lecture halls in order to ensure safety.

Having room schedulers and cloud-based **remote management** tools to minimize downtimes in the system and monitor the campus from anywhere will enable IHLs to maintain order and mitigate any risk of infection.



Secure school grounds

Wifi and on-campus video cameras also make for a safer learning environment. These technologies allow schools to monitor what's going on around campus. For example, it can help identify areas where students tend to gather and disregard social distancing measures. It can also monitor vulnerabilities within the campus, such as areas where outsiders can easily enter the campus.



Data-driven decision making

Integrating technology within the campus also allows for data creation and collection. This data can inform important decisions that need to be made within the campus or even within the classroom. For example, teachers that automate their tasks will be able to get a data-driven view of how a class is performing. This can help educators understand how to modify the curriculum to best suit the students' needs, or identify tools to better engage students.

As technology continues to capture data within the campus, cloud-based systems can keep track of relevant metrics such as dropped videoconferences, room occupancy, and device usage so stakeholders can improve the hybrid learning experience.

⁴⁰ The future of campus life in a post-COVID world



The future of the smart campus is here

Hybrid learning became the answer for many educational institutions amid Covid-19, but it's no band-aid solution—hybrid learning is here to stay.

This is an opportunity for schools to get creative and to embrace the shift that has been happening even before the pandemic took place. This shift can take future generations into the next level of learning—one that doesn't necessarily have to occur only within the four walls of a classroom.

Investments have to be made for hybrid learning and smart campuses to come into fruition. That's where Crestron comes in.

Why Crestron?

Crestron is an end-to-end solution provider that uses technology to transform people's lives for the better. We believe that the future of education is also being shaped and transformed by technology, from the way student learning is optimized to the way the campus is calibrated. We have high-tech solutions that can usher in the smart campus for IHLs all over Asia.

Our products are backed by more than 90 fully staffed offices that provide 24 x 7 x 365 sales, technical, and training support across the globe. In addition to our World Headquarters in Rockleigh, New Jersey, Crestron has sales and support offices throughout the U.S., Canada, Europe, Asia, Latin America, and Australia.

While Covid-19 has accelerated the discussions of hybrid learning, as more children are born into an increasingly digital world, the role of technology in shaping education will always be an important discussion. Crestron is here to turn those discussions into reality. Discover Crestron Education solutions by [visiting this link](#).



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Joseph Lim
*Director, Facilities Division,
Singapore Institute of Management*

