

The world is your classroom. Teach, inspire and innovate with our technology.

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The world is changing rapidly. Technology is creating new jobs as we speak – and making others redundant just as quickly. So, it's vital that schools prepare our students for this future, and give them the skills necessary to thrive and succeed. To do this, education must go digital. Technology must be used in our classrooms – but used as more than a pen and paper replacement.

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This substitution approach was used by the former government of Yingluck Shinawatra. It pledged to buy 800,000 tablets, and distributed them to primary and secondary schools around the country. But no guidance or curriculum was handed out alongside them. So, many were left unused¹. We know the importance of using technology as more than a substitute. When we worked with Chulalongkorn University Demonstration Secondary School, our staff worked with teachers and students every day, showing them how tech can be integrated into lessons.

It's this type of learning that the Thailand 4.0 policy will create more of. Putting a bigger emphasis on creating a successful future workplace, this government initiative will see more and more technology used in education. And it will be used as a core part of the curriculum – not just a fun, fancy extra.

There's been a fundamental shift in the way IT integrates with our education system. Computers and technology are no longer limited to being the subject of dedicated IT lessons. They are now enriching and augmenting our children's lessons, making them more interactive, immersive, and inspirational.

¹<http://asia.nikkei.com/Business/Companies/Fujitsu-IT-supporting-Thai-educational-reforms>

Our education expectations

Let's think about what we expect our education system to deliver to our children. Many of our expectations are intangible. We hope our education establishments ignite our children's imaginations, and inspire them to fulfill their potential. Pragmatically, we want our children's education to prepare them for their future lives and careers.

» In the past, students tended to just copy and write down teachers' answers. Now, however, they have learned to compare their answers and to find the best answer together. Using technology has brought about not only collaborative learning and information sharing, but also the collaboration between teachers and students. As a result, students have changed. Not only do they learn the materials given by teachers in the assigned order, but they also to take classes more actively.

Siriphat Chuenka, teacher,
Chulalongkorn University
Demonstration Secondary School

Their world will bristle with hyper-connected technology. And classrooms must teach them the skills they'll need to thrive in that environment. They are digital natives. They will never know a world where a man can land on the moon using less computing power than that found in a typical Internet of Things device.

So how can education establishments prepare students for a world that doesn't yet exist? How can we teach our children to do jobs that aren't yet invented?

The answer is that we cannot. However, what we can provide is a strong foundation of core learnings and ethics, upon which they can build. They can learn critical assessment, and given a framework that will allow them to continually acquire new skills throughout their lives. They must also be given the opportunity to learn with technology. And this must enhance and supplement their education.



Challenges to the take up of technology in education



The needs of our young people have changed. So, our education establishments must change too. A change of this magnitude will present many challenges for organizations and individuals alike.

» How can schools and colleges get the benefits that an innovative and greater use of technology can bring, if they can't afford it?

One of the challenges slowing the uptake of technology is overcoming reluctance. Some educators don't want to adopt new techniques, largely caused by a lack of training and support. So, how can we demystify technology and enable them to fully embrace it the way their students do?

In some cases, this is simply a generational issue that will be addressed naturally over time. But we can also address this challenge by recognizing the anxiety and lack of comfort that some teachers and lecturers experienced. And then we can focus on easing these concerns through structured training programs.

Budgets are also a major challenge. Technology is expensive, and with finances already squeezed, buying new equipment can be low on the priority list. When tech solutions are bought, they tend to be proven techniques that demonstrate their benefits.

This poses a real issue. How can schools and colleges get the benefits that an innovative and greater use of technology can bring, if they can't afford it? The answer might be in industry. Industry will benefit from improved education – so industry will need to take an active role in financing solutions, through schemes such as partnerships.

A digital education



Across the globe, access to the Internet has revolutionized learning. We are moving to a world of constant interaction and peer support, which can be facilitated and encouraged by education establishments and parents at home. Social media will play an increasingly important role in education, enabling teamwork and the sharing of ideas. Perhaps most importantly, it will act as a conduit for discussion and debate, providing students with valuable life skills.

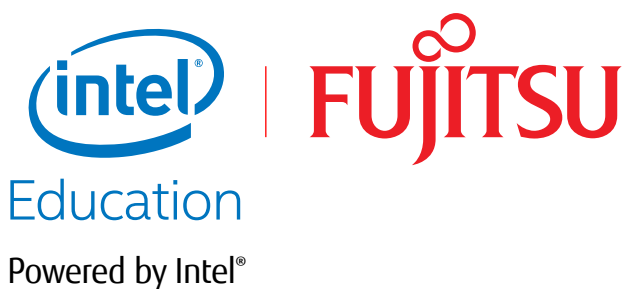
» The internet makes it easier for students to plagiarize and copy existing content, robbing them of investigative skills and the thought processes required for understanding.

And learning from others via the internet isn't just restricted to the younger generation. In the UK, a man unskilled in the building trade constructed his own home. How did an untrained individual accomplish this? He simply watched videos on YouTube and then put into practice what he had observed.

The term 'digital natives' is often used to describe today's students. They have grown up in a world full of technology, and are comfortable with how to use it. However, this doesn't mean they know how to use it to further their education. Indeed, the internet makes it easier for students to plagiarize and copy existing content, robbing them of investigative skills and the thought processes required for understanding.

Our children are operating in two separate digital environments. The first is the controlled environment provided by the education system, where they are protected and safe. And the second is the uncontrolled environment they may have on their phone or at home, which potentially exposes them to threats and requires them to be cautious.

A digital education is a vital part of any curriculum. Not only must our children learn how to use technology efficiently and effectively, but they must also learn about the threats. They must be taught the characteristics of good digital citizenship, and the practical behaviors they can demonstrate to protect themselves online.



Technology to tailor the learning experience

No two students have the same educational needs. So, it stands to reason that students will learn best when an educational program meets their needs. However, very few students will enjoy the privilege of one-on-one tutoring. The majority will share their learning environment and teachers with many other students, albeit often with peers of a similar ability. The opportunities for a bespoke approach have traditionally been limited. How can education establishments support young people at their own capability level?

» Technology will let us customize aspects of our children's learning.

Like it has done in other spheres such as entertainment, technology will let us customize aspects of our children's learning. There are often multiple ways to teach a concept. Educational applications can play a role in supporting the teachers by demonstrating various techniques, and then allowing the pupils to practice using the technique that makes the most sense to them. This also allows a rapid feedback loop for the teacher, giving them swift and accurate visibility of the areas that individuals are struggling with.

Technology also allows educators to more easily and regularly use a concept that has long been used by teachers to drive learning through competition – gamification. Aspects of game design, such as progression, problem-solving, attainment, collaboration, and cascading information, can be introduced to the software to make learning more engaging. This is a real growth area, and has been demonstrated with the educational application of Minecraft.

With the increased use of technology in education, exam boards must re-evaluate how they ascertain levels of learning and understanding. Given that our students are unlikely to use pen and paper in their careers, is that still a relevant medium to use for examinations?

Technology offers possibilities for monitoring and improving education standards. Remote video observations are already used in some countries to provide feedback to teachers. This may well be adopted more widely to offer a supplementary capability or to replace in-person observations and assessments.

But can technology offer solutions where teachers themselves are in short supply? In 2013, the One Laptop Per Child organization tried an experiment. They identified two remote Ethiopian villages where children had no access to education, and gave the children a tablet device. No instructions were provided, other than to some adults on how to use the solar charging station. The tablets were pre-loaded with specialist software developed by MIT. Through experimentation and interaction with the tablet, the children learnt the alphabet, read books, watched video clips, and played educational games. After several months, the children in the village were seen singing the alphabet song.

Technology also has an important role to play for students with special needs. Here, technology can level the educational playing field. It can help to give all pupils an opportunity to reach their full potential in an inclusive environment. Technology has been improving the lives of pupils with disabilities for many years, but this equipment often came with a hefty price tag. However, modern consumer devices can now provide the same functionality that previously required specialist equipment. Examples include tasks such as speech recognition and text-to-speech. Specialist appliances are being replaced by downloadable apps for a fraction of the price.



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So, is technology a cure-all?

There is a clear belief that the integration of technology into the education of our children will provide a net benefit to their learning. However, a recent study has shown that this may not be the case. The study showed that education systems that provided more access to computers were actually improving less than those that limited access.

» The role that IT plays in the education of our children is increasing with every passing day.

This result is at first counter-intuitive. How can greater access to technology, with all the benefits of a more immersive and interactive experience, produce a lower quality result? The truth is that technology is not a silver bullet. While it's true that technology can contribute to an enhanced learning environment, its mere presence doesn't do this automatically.

We must ensure that where technology is implemented, it is made reliable and easy to use – dealing with technical issues robs a class of valuable learning time. The move to digital must bring obvious improvements.

Choosing which technologies to implement will depend on several factors:

- what the learning situation is
- the available budget
- relevance to the setting
- how the technology can enhance the learning experience.



Giving students the skills to succeed



From a technology point of view, the classrooms of our children will bear little resemblance to those we remember from our youth. The digital transformation is well underway, and there are no keener adopters nor more avid users of technology than the young. Technology helps them feed their insatiable appetite for knowledge, and offers opportunities to tailor the learning experience for the needs of each individual.

» This exciting journey cannot be completed without teachers. Their job is one of the most vital in our society, and will continue to be.

With Thailand 4.0 in place, we will begin to see a big push for more technology in our schools. The skills they need to succeed in the workplace need to be taught and developed now. And the only way this can happen, is with a growing use of technology.

Some schools are already using technology to their advantage. Chulalongkorn University Demonstration Secondary School uses our tablets to give students detailed lessons. For example, in geography lessons, teachers use tablets to show maps. Students can learn geographical features through high-definition maps and using zoom functions².

This exciting journey cannot be completed without teachers. Their job is one of the most vital in our society, and will continue to be so no matter how much technology permeates our education establishments. Their role in unlocking our children's creativity and imaginations is vital to ensuring they all reach their full potential.

²Chulalongkorn University Demonstration School (Thailand), Case Study, Fujitsu

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