

Where do I start.....



Getting the cart behind the horses

Why student device selection starts with education strategy

by Trent Ray, Group Manager, Expanding Learning Horizons

Whether the chicken or the egg came first probably doesn't matter much anymore except to a few scientific types or palaeontologists. The conundrum can be ranked along with how many angels can dance on a pin's head, a question that vexed generations of medieval philosophers, and slightly more interesting than: *"If a tree falls in the forest and there's no living creature there to hear it, does it actually make a crashing noise?"* On the other hand, putting the cart before the horse is widely accepted as a really bad idea, even though few of us rely on them these days! The horse simply has to come first...

That's why it is ironic to observe the passion aroused within schools around the choice of models for student devices towards the end of each school year. So much energy and agonising and time and effort expended within the IT team, by teachers and even parents when, in too many cases, the school and its educators are yet to develop an effective strategy for using technology in education.

One of the challenges we saw in recent years was the Digital Education Revolution funding for 1-to-1 student-to-computer programs. Yes, it was a nice problem to have – but many schools set off on the path of a 1-to-1 program without considering all the elements required for its success. This is not to criticise these schools, but it's a pity that the funding was available for a limited amount of time, forcing many to rush into buying devices by a set deadline.

For strategy, think horse. The cart – the actual notebook brand and model, and even the form factor of the student device: notebook, tablet, slate or smartphone – should come behind:

1. Desired educational outcomes
2. Getting teachers up to speed to achieve them
3. Software they'll need students to use
4. Connectivity required to effect this, and
5. Strategies for ensuring student devices are highly available

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Putting the cart before the horse

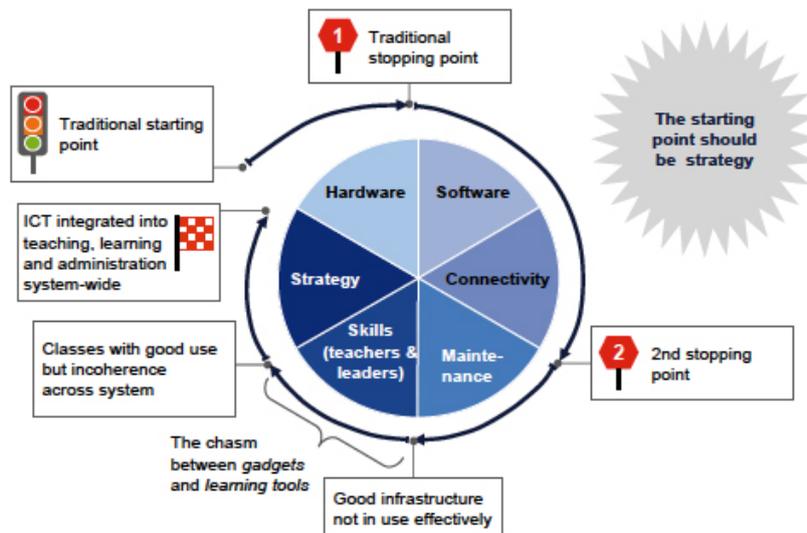
McKinsey & Company's international study¹ into the use and implementation of technology in education has profound implications for effective school IT strategy. It identifies a number of traditional 'stopping points' which schools can hit accidentally; if we can get past them, we're much more likely to implement successful ICT programs.

The first thing we should focus on is actually one of the last things that some schools do: thinking about their learning strategy by asking "What are we trying to achieve by implementing a 1-to-1 program? Because if it's not for good learning then why are we doing it?"

As the McKinsey model demonstrates, the traditional starting point is the hardware: "What device are we going to buy or mandate?" But what you're going to put in the hands of your students should not be the starting point. That discussion should be guided by the type of teaching and learning you plan to offer, and the possibilities for learning that the devices could achieve.

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The journey to effective system-wide ICT integration



Source: McKinsey & Company

Traditionally, schools have started with hardware and then just stop there. But we now know that a technology-rich classroom with bad teaching and learning is just an expensive bad classroom. We also need to consider:

Software: Selecting the right learning applications can make a significant difference to the possibilities for teachers and, more importantly, the possibilities for students.

Connectivity: This calls for a reliable and stable school network infrastructure, providing wireless access throughout campuses, along with dependable access to the internet supported by an appropriate level of bandwidth.

Some schools get the hardware, software, servers, network infrastructure and internet connectivity in place – and then stop. But we also now know that's not enough.

¹ Shaping the Future: How Good Education Systems Can Become Great in the Decade Ahead, McKinsey Education, 2009

Device maintenance: Statistically, student devices fail six times as often as similar devices used in the average office environment. Once these devices become essential equipment for every student, extended return to service times are unacceptable.

So let's examine the right order for implementing school technology... which is putting all the horses in front of the cart.

The Lead Horse: Education Strategy

When people got around in coaches, the driver usually had a 'lead horse' – often an Alpha mare – to rely on for managing the other horses in doing their job, and leading by example.

Probably the greatest challenge in implementing a 1-to-1 program is the preparation of teachers for the shift in teaching and learning required. And teaching is shifting significantly as a result of giving every student a device, especially when connected to the world's knowledge.

Schools that rushed to deploy a 1-to-1 student-to-device ratio, thanks to DER funding, are now going back to think about the best classroom practices to support that environment – which is looking very different to 20 or 30 years ago. Teacher Professional Learning is obviously a requirement these schools need to invest in fairly heavily because, without overlaying appropriate teaching and learning practices, the technology may as well not be in the classroom.

The most important part of implementing successful 1-to-1 is considering the strategy – which is critical to understanding why you're doing it in the first place. If your school thought: *"We're doing it because of the funding"*, it might be the time to go back and think about the wider possibilities now that students have technology in their hands. This means reflecting on everything that is possible with personal technology, and how it can achieve our vision for learning in the 21st century.

That leads to the questions: *"What do we need to get there?"* and *"How do we get there?"*. An educational strategy would ideally have been the starting point – and many schools now need to go back and take a serious look at how they will answer these questions.

The Second Runner: Teacher PD

Technology is only as good as the activities educators wrap around it – so having determined the educational strategy you would like to pursue using a device for each student, you must next get your teaching staff up to speed.

Over the past couple of decades, ICT Professional Learning for teachers principally focused on *"What can I do in my classroom to teach better with technology?"* When you move to a 1-to-1 environment, you must shift the focus across to what your students can do with technology to support and enhance their learning.

Ultimately, investment in professional learning models must impact the 'bottom line': measurable student learning outcomes – which is what the rubrics of 21st Learning Design (21CLD) are all about. Extensive global research has found reflective processes such as peer coaching and professional learning teams deliver the most effective ways of ensuring investment in skills and use of technology actually deliver the best classroom results.

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The Trojan Horse and Software²

Every classicist knows that, after a 10-year siege, the Greeks placed a large wooden horse under the walls of Troy. Intrigued, the Trojans wheeled it into their fortified city, Greek soldiers emerged overnight to open the gates to their colleagues outside and Troy was finally taken... This was the source of the old maxim *beware of Greeks bearing gifts*³ – which is awfully unfair as many of us enjoy the delicacies our Greek colleagues bring in around Orthodox Easter!

So what needs to be *inside* student devices? Teachers must be involved in the process of choosing software to enhance learning for their students, because a student device with the standard productivity tools is unlikely to support powerful learning. Selection of software to be loaded on these devices should involve consultation with every faculty to determine what kinds of software are needed. This also requires sharing the resultant ‘image’, so that everyone who needs to has the chance to review and test it well before the end of the fourth term. Then the IT team can refine it, test it on the chosen device or devices and arrange its uploading to each in readiness for the new school year – because each student device must ‘deliver’ from Day One.

The last thing any teacher wants to experience is walking into a classroom of 25 students, well-prepared for the lesson – only to discover that software they need to use isn’t actually installed on their devices. Rather like waking up in Troy one morning to find the Greeks have entered the city overnight!

The Carrier Horse: Connectivity

The school network needs to ‘carry’ 21st century learning and all its demands for collaboration, knowledge search and advanced communication.

Some schools think that all we need do is give kids an internet connection and they’re away... But that’s not as easy as it sounds, because many schools are actually running quite sophisticated communications infrastructure – sometimes of up to 1,500 concurrent users on a single network. Plus, these users are continuously moving between classrooms and campuses; very different from a corporate environment where they’d be sitting in set desks, only occasionally moving to a meeting room. This makes connectivity immensely complex – compounded by the fact that schools generally don’t have corporate-sized IT teams.

This requires a school network infrastructure that can handle hundreds (or upwards of a thousand) devices as you roll out your 1-to-1 program. It also involves asking some hard questions about your infrastructure set up, and whether or not it’s robust and reliable enough to cope with what your teachers need to accomplish.

One of the real dangers is that teachers can set a high bar in their expectations of the technology supporting planned learning opportunities for their students. It’s serious pressure having a classroom of 25-plus Year 9 students staring at you when connectivity ‘breaks’ or feels like walking in treacle. This puts teachers in the unenviable position of keeping the class moving when the school network is letting them down. Such experiences could lead to teachers putting learning technology aside and not using it in their lessons; not a good outcome.

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² We’re not talking about Trojan Horse computer viruses... That’s a whole other topic, which you should rely on your IT team to protect you from!

³ See <http://ancienthistory.about.com/od/troyilium/f/GreeksBearing.htm>

Finally, the hardware cart!

Essentially, your student device selections need to be based on a range of considerations.

Your vision of what learning should look like because they need to enable you to achieve that vision and, in this respect, not all devices are equal.

Form factor because, yes, apps are wonderful, seriously cool, etc, but they are very shallow in educational terms – so an iPad or smartphone will not necessarily support all the 21st century learning skills they need to.

Financing because, since DER funding ended, schools are faced with the stark choice of purchasing student devices or getting parents to – which can create a dilemma: you want to keep fees down, but if they need cover individual student device costs, would you be better transferring them directly to the parent?

Robustness because they're going to need survive in the hands of students for three or more years: tugged out of/shoved into backpacks, tossed around sports changing rooms, dumped in heaps on public transport or in Mum's car boot – not to mention being opened and closed multiple times a day in different classrooms, then getting overheated while engulfed in doonas during late-night homework sessions and punched when they or the internet connection drop out!

Warranty and maintenance service levels because, when devices malfunction or suffer from accidental damage (see above!), you don't want your IT team to bear that load alone. Servicing multiple end-devices is extraordinarily time-consuming (= expensive and distracting from core school ICT support). You need a rapid on-site return-to-service arrangement, way beyond the standard warranties offered by vendors, because these devices are now mission-critical to each student's classroom learning and ability to complete assignments.

Choice of technology partner because, given all of the above, it's so much more than just buying technology from a company and having it delivered to school and then 'off the students go'. Your ideal partner will be able to guide you through the whole journey of running a 1-to-1 program, so that it best fits your school on an ongoing basis. This involves:

- Sharing proven best practices in education technology strategies
- Supporting teacher Professional Learning to ensure your school optimises use of technology in the classroom
- Helping you ready your core school ICT infrastructure to cope with the additional demands
- Expertise in educational device selection and software choices
- Working with your parent community and students through 1-to-1 program implementation (whether devices are school- or parent-owned)

Most importantly, you'll need ongoing support in the months and years to come to ensure your 1-to-1 program is a true success.

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About the author

Trent Ray, ICT Education Specialist & Group Manager, ELH

Trent Ray is an ICT Education Specialist and Group Manager of Expanding Learning Horizons (ELH), a division of Computelec. ELH was built around what current educational research tells us about effective Professional Learning in integrating ICT within the classroom. It delivers consulting for schools embarking on or in the process of embedding technology into their curricula, conducts ICT Professional Learning, 21st Century Learning Design and peer coaching workshops for teachers, as well as online and face-to-face assistance with curriculum design.

