

Schools grapple with the new divide: screentime or textbooks

NATASHA BITA THE AUSTRALIAN 12:00AM JUNE 18, 2016



Karen Cox reads a book with daughter Lily 5, at their home in Ashgrove, Brisbane. Picture: Lyndon Mechielsen

Veteran science teacher Peter Wilson has sprung students using smartphones to deal drugs in class.

One Year 9 boy was text messaging classmates to collect \$20 sachets of marijuana. Wilson was almost as incredulous when a Year 12 student confessed, “I never check my school email — it’s always full of homework”.

“I’ve been in countless schools where I am virtually policing appropriate computer use,” the Tasmanian teacher told Inquirer.

Wilson — who has taught in 15 schools in four states over the past 20 years — has joined the chorus of educators and parents questioning the wisdom of too much technology in the classroom. Are hi-tech schools essential to groom a generation of graduates skilled in the future-proof STEM fields of science, technology, engineering and maths? Or are the 21st century toolkits of computers, tablets and smartphones dumbing down children to be mere consumers, rather than creators, of technology?

“In the light of all the whizzbang technology of today, we seem to think that the younger and younger children are exposed to this wizardry without the rigours of reading, writing and numeracy instilled in their minds, the better learners they will be,” says Wilson. “We have an enormous illiteracy issue in society and an increase in attention deficit in students.”

A growing body of research is pointing to the pedagogical problems of exposing children to technology too soon, of over-reliance on computers, and of leapfrogging the old-school basics of reading, handwriting and mathematics that form the foundation of more creative learning.

Even Microsoft founder Bill Gates acknowledged to a summit of ed-tech entrepreneurs in April that “we really haven’t changed (students’ academic) outcomes” as a result of technology. He predicted the market for digital instruction materials in schools would grow by \$US1.5 billion over the next five years in the US alone.

Sydney Grammar headmaster John Vallance made news internationally after *The Weekend Australian* revealed his elite private school had never allowed laptops in its classrooms of high achievers. Students must hand write assignments until Year 10. The boys can use computers in tech labs, but Vallance says they distract from teaching, discussion and questioning when used in class.

Sydney Grammar is evaluating the difference between Year 3 students who write stories by

hand, or use computers. “They don’t write as much on the keyboard,” Vallance reveals. “They’re much more prepared to look out the window, to think, ruminate and write if they’re given a pencil and paper instead of a screen and a keyboard. The act of composing a sentence in your head and physically shaping the letters on a pad seems to provide a different neural process than just having a finger jab at a keyboard.”

A recent research paper by the US National Bureau of Economic Research found that economics students at the elite US Military Academy at West Point did worse in tests when they were allowed to use laptops and the internet in class: “The results ... suggest that computer devices have a substantial negative effect on academic performance ... (and use) reduces final exam scores by 18 per cent of a standard deviation. We also find modest evidence that computer usage is most detrimental to male students and to students who entered the course with a high grade point average.”

The researchers concluded that laptops and tablets present “a host of potential distractions”. “Students who are using their tablet or computer may be surfing the internet, checking email, messaging with friends, or even completing homework for that class or another class,” the study says. “All of these activities could draw a student’s attention away from the class, resulting in a lower understanding of the material.” The study was based only on laptops used for note-taking, so did not factor in the benefits of computing for classroom instruction.

Across Australia, state education departments let schools set their own policies on the use of information technology in classrooms. Laptops and tablets — confined to the senior years of high school just a few years ago — are now being mandated for the first year of primary school, raising questions over equity. Ashgrove State School, in the inner-Brisbane electorate of Queensland Education Minister Kate Jones, has been forced to review its policy of making “prep” students as young as four bring their own ipad to school next year, at a cost of up to \$863 plus a \$150 “technology fee”. When local mother Karen Cox complained, she was told there was no screen-free option for daughter Lily.

The school’s website warns that young children could be exposed to inappropriate material. “The school cannot control information accessed through the internet,” it says. “Information may be accessed or accidentally displayed which could be illegal, dangerous or offensive, with or without the student’s immediate knowledge. Teachers will always exercise their duty of care, but protection, mitigation and discontinued access to harmful information requires responsible use by the student.”

Cyber Safety Solutions “cyber cop” Susan McLean, who advises schools on safe internet use, says schools could be prosecuted or sued if children are exposed to dangerous material, such as pornography or bullying, in the classroom or playground.

“The internet is not a kids’ playground,” she says. “If a school is providing technology to a child, it has a duty of care to ensure the child is protected and safe and secure. It is not up to the children to ensure their own safety and security online. Kids are tech-savvy but they are not cognitively developed enough to understand the consequences and understand risk.”

McLean is concerned some primary schools let children “Google aimlessly” to research assignments. And she criticises teachers for deciding which apps students should use, without first consulting colleagues or education departments. “Some teachers make appallingly poor decisions,” she says. “Apps should be assessed for their educational merit.”

The former Rudd Labor government promised a digital education revolution, splurging \$2.4bn in taxpayer funds for computers in every high school from 2009. Despite this heavy spending, barely half the nation’s students can use a computer properly. Testing of 10,500 students in 640 schools in 2014 found that only 55 per cent of Year 6 students and 52 per cent of Year 10 students met the basic “proficient standard” in the Australian National Assessment Program for ICT Literacy test. The Australian Curriculum, Assessment and Reporting Authority concluded students’ use of smartphones and tablets could be draining their technical knowledge of computing. University of Queensland maths academic Matthew Dean laments that so many high school leavers lack the basic maths skills required for university. He has written to the Queensland Curriculum and Assessment Authority, urging it to “make sure that all senior mathematics exams are electronic-free”. “From my own years of lecturing, I have noticed that the introduction of graphics calculators has significantly inhibited maths students from mastering the skill of graphing elementary

functions, which is essential for further mathematical or scientific work,” he wrote. Dean told Inquirer that students can now solve any maths problem using an online service, Wolfram Mathematica. “I think everyone understands the need for kids to learn their times tables and arithmetic as a prerequisite for high school algebra,” he says.

“You could say we’ve got machines now so no one needs to learn these skills anymore, but you do need the foundation to proceed to higher learning. It’s just not possible to step into advanced maths and scientific reasoning without the basics. And doing mathematics by hand provides a more intimate, thorough knowledge. Drawing a graph, you’ve got to plot lots of points and join them together, but if you do it on a calculator it’s just a matter of pressing the button.”

Australian Mathematical Sciences Institute director Geoff Prince wants a better balance between hi-tech teaching and old-school basics. “We can’t quarantine kids from the future,” he says. “There are parts of the maths curriculum, such as data analysis, where it would be irresponsible not to use technology. But primary educators need to be focused on outcomes, and not get distracted and seduced by the tools. Calculators should not be a substitute for being able to do it by yourself.”

Prince is concerned so many Australian children leave primary school without the skills of adding, subtracting, multiplying and dividing, and recognising basic fractions. “Lots of kids get to secondary school and don’t engage in maths because they’re incompetent,” he says. “You can’t engage kids if they don’t know how to do it — it’s like being illiterate.”

Griffith University dean of learning and teaching Glenn Finger insists that children need to learn IT skills from the first years of school if they are to be skilled for the jobs of the future. “Australia is a decade behind other countries,” he says. “Children are now in a digital ecosystem, immersed in technology from birth. Even Socrates would now be learning how to use an iPad and social media.”

The OECD has questioned the growing reliance on technology in schools. In a report last year, it said schools must give students a solid foundation in reading, writing and maths before introducing computers. It found that heavy users of computers in the classroom “do a lot worse in most learning outcomes”. “In the end, technology can amplify great teaching, but great technology cannot replace poor teaching,” it concluded.

University of the Sunshine Coast associate professor Michael Nagel, who has written 10 books on educational psychology and child development, worries that technology is affecting children’s malleable minds. “There’s scant evidence to say that technology enhances educational outcomes,” he says. “Too often, schools use technology as a marketing ploy without saying what evidence supports its use. I’m not a Luddite and I’m not anti-technology, but parents have every right to say, ‘Show me the evidence’.”

Nagel dismisses many of the educational and game-based “apps” used on tablets and smart phones as “digital candy”. “Most of the apps have no educational value and make kids distracted and impulsive,” he says. “We look at technology as the answer to everything, but from a developmental standpoint, kids need to play. They learn best in a classroom where they’re engaged with each other — making up their own games and their own rules — and not in a virtual world. Play enhances neural development.”

Children’s brains keep growing into their 20s, says Nagel. “We still have no idea of the impact this is having on children’s developing brains,” he says. “Are we creating a generation of kids who don’t know how to wind down? Sometimes they just need to switch off.”

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