Forget the binary: thinking and learning require the old, the digital and the home!

Dr Bruce Addison, Dean of Curriculum and Scholarship Brisbane Girls Grammar School

Recently there has been a flurry of newspaper articles concerning the pros and cons of laptop devices and by association, digital technology on the learning scape of our young people. Senior educators have mused about the relative merits of this technology educationally while the fiscal largesse associated with government funding of it has also been noted. A critical examination of this discussion leads inevitably to the conclusion that the use of laptops in classrooms as well as the use of digital technology more generally, is a deeply layered and complex issue.

Starting with the home front, it appears that digital technology is invasive and disruptive as much as it is curiosity evoking and stimulating. For our young people it is emancipatory, allowing virtual reality to extend the imagination while simultaneously destroying the notion of quiet time and the security associated with adult-centered oversight (Addison, 2012). Boundary blurring, caused by digital accessibility, is both a blessing and a curse. As Furlong and Davies (2011, p. 44) note:

"Young people's ubiquitous access to mobile technologies, especially the mobile phone, means that conventional institutional boundaries between home, school and leisure are increasingly breaking down" (2011, p. 1–2).

The reality is that the notion of what is 'school' work and what is 'home' work has changed significantly. It is well known that when students collaborate both personally and digitally, learning occurs. Another result arising from this digital connectedness is that the home is no longer an uninterrupted 'haven' away from the distraction of friends and social media's inevitable banality. Today children cannot escape digital engagement as well as digital distraction, digital engagement's unrepentant partner. The potential for distraction is enormous and, because of it, the environments in which learning occurs differ significantly from yesteryear (Sefton-Green, 2008; Furlong & Davies, 2011). It appears that we may have to start to teach our young people the skill of creating deep fissures of productivity between distractions. Digital distraction will remain an ever-present reality in our lives.

This new reality requires fresh skillsets from both students and parents. At its best, digitalism has the potential to reinvigorate curiosity intergenerationally. Using digital technology to role model curiosity and wonder is a way in which parents can contribute significantly to learning and the emergence of wonder-based curiosity. This approach would help to develop a culture in which the home becomes a natural extension of the school or more importantly, the school becomes a natural extension of the home. This in many respects is the gift of digital connectedness. As Craft notes, *"children actively explore their environments with encouragement and support from adults, constructing meaning in context"* (2011, p. 73).

Digital access is all-pervasive and is not confined to the home. The use of laptop devices has become commonplace in many classrooms across the country. Today students have access to processing power that once would have been the stuff of science fiction fantasy. How frequently should these devices be used in our classrooms? There is no straightforward answer to this question. If it is suggested that the possession of a laptop will render pre-digital skills such as handwriting obsolete, then this is very flawed thinking. Students need both keyboard and handwriting skills if they are to be effective 21st century learners. There are a number of very important reasons for this. Firstly, most examinations require students to handwrite their responses. If students are not practising and honing their handwriting skills this will cause a suboptimal performance when they are required to write under examination conditions. Students must be exposed to an array of teaching styles, utilising both traditional and digital skillsets, if they are to optimise their learning potential.

Secondly, there is some very compelling research emerging suggesting that handwritten class notes enable higher order processing skills that are not activated when typing notes, especially those generated from PowerPoint. Great care must be taken to ensure that we are not producing a generation of parrots, whose only skill is verbatim copying, devoid of critical reflection. Mueller and Oppenheimer (2014, p. 1159) in a recent study conclude:

"…when laptops are used solely to take notes, they may be impairing learning because their use results in shallower processing" (p.1159).

May (2014, p. 1) when commenting on this research observes:
"Writing by hand is slower and more cumbersome than typing, and students cannot possibly write down every word from a lecture. Instead they listen, digest, and summarize so that they can succinctly capture the essence of the information. Thus, taking notes by hand forces the brain to engage in some heavy 'mental lifting', and these efforts foster comprehension and retention. By contrast, when typing students can easily produce a written record of the lecture without processing its meaning, as faster typing speeds allow students to transcribe a lecture word for word without devoting much thought to the content" (p. 2).

Synthesis is a very important higher order thinking skill and remains a key component of the many reworkings of Benjamin Bloom's (1956) well-known taxonomy. It is a very difficult skill to master. Marzano and Kendall (2007) unpack this noting:

"…synthesis requires creative behaviour on the part of the student because it involves newly constructed and unique products" (p. 7).

This type of thinking requires much practice and time to master. The art and importance of slow thinking (Kahneman, 2012)

as careful thinking must remain an important component of our learning culture. The culture of immediacy that has become so pervasive must be challenged.

Our digital world has created many opportunities for exciting and relevant learning. Creativity and possibility thinking (Craft, 2011) should be the reality associated with digitalism's ascendance. This does not mean that all that is old should be jettisoned in favour of everything that is new. Students must master keyboard skills and digital acuity as well as the synthesis arising from ponderous thought and handwritten note taking. The old and the new should be allowed to coexist comfortably. They should not be seen as a binary. Binaries are unhelpful as they polarise thought, creating competing constructs when more nuanced interrelationships are required.

The digital world is rewarding in so many ways. It offers the possibility of relevance, immediacy and modelling both at home and at school. If used in tandem with a well-designed approach to thinking skills, underscored by the craftsmanship of handwritten synthesised reflection, our students will inherit the possibility of creative endeavour unknown to previous generations. If all of this is achieved carefully, creatively and thoughtfully, a thinking and learning scape will emerge worthy of the endless possibilities arising from the wonder of digital connectedness.

References

Addison, B 2012, 'Academic Care, Classroom Pedagogy and the House Group Teacher: "Making Hope Practical" in Uncertain Times', *Pastoral Care in Education*, vol. 30, no. 4, pp. 303–315.

Bloom, BS, Engelhart, MD, Furst, EJ, Hill, WH, Krathwohl, DR 1956, *Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain*, David McKay Company, New York.

Craft, A 2011, *Creativity and education futures: learning in a digital age*, Trentham Books, Stoke-on-Trent.

Furlong, J, Davies, C 2011, 'Young people, new technologies and learning at home: taking context seriously', *Oxford Review of Education*, vol. 38, no. 1, pp. 45–62.

Kahneman, D 2012, *Thinking Fast and Slow*, Penguin, London.

Marzano, R, Kendall, J 2007, *The New Taxonomy of Educational Objectives*, Corwin, Thousand Oaks.

May, C 2014, 'A Learning Secret: Don't Take Notes with a Laptop', *Scientific American*, 3 June, pp. 1–5.

Mueller, P, Oppenheimer, D 2014, 'The Pen is Mightier Than the Keyboard: Advantages of Longhand Over Laptop Note Taking', *Psychological Science*, vol. 25, no. 6, pp. 1159–1168.

Sefton-Green, J 2008, Informal learning a solution in search of a problem, in K, Drotner, H, Jensen, K, Schroder (Eds), *Informal learning and digital media*, Cambridge Scholars Press, Newcastle.

About the author

Dr Bruce Addison is Dean of Curriculum and Scholarship at Brisbane Girls Grammar School where he teaches Economics and Philosophy of Learning. Dr Addison obtained his PhD, in the field of educational leadership, from the Univeristy of Queensland in 2007. He currently co-ordinates postgraduate courses in leadership and curriculum at the University of Queensland.