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## Keeping a balance in our classrooms

### Avoiding the IT overload

Just last week I watched a toddler massively engaged in an Ipad at an airport. At first I was impressed by the toddler's capacity to slide the screen to find the visual activity she was seeking. Then I watched as for half an hour she ignored her surroundings (including large planes landing just outside the window) and sat still except for the movement of her right hand. Then I felt sad. Toddlers and children under school age are creating the neuronal highways that will ensure they can develop on so many levels – physically, emotionally, socially, cognitively and even spiritually. Massive sensory exploration, constant language saturation and physical movement are needed for our amazing brains to develop spatial, auditory and kinaesthetic capacity that then influences almost everything we do. We cannot learn to read without these key developments.

The widespread acceptance of the world of screens has bothered me for a while, and the changing landscape in our classrooms is particularly worrying. I regularly visit classrooms all around Australia, and no matter whether it is in a remote community or in a city the digital age has arrived. There are endless laptop computers, interactive whiteboards, the replacement of printed books with e-books, and the massive use of the Internet to carry out research as well as the more recent activity of getting students to create multi-modal texts. Then there are mobile phones, mainly smart phones that allow some of our savvy adolescents to stay connected to the outside world while in class.

Humans are social beings and will always be drawn to staying connected. The digital world “appears” to do that. However, we are losing our children and adolescents more and

more to depression and irrational violence. Bullying is a much more serious problem in our schools than it was before the digital age when students spent more time playing with each other. The building of emotional and social competence needs human contact, and the shallow connectedness that occurs via the web is unable to meet the core needs of human intimacy.

Frequent screen time has some other concerns. The first is the multi-tasking that occurs. Students often have three or four screens open and “flit” from one to the other. Neuropsychologist Professor Keith Laws warns that genuine high-level multi-tasking is impossible in humans.

Dr Chris Chapparo from the University of Sydney agrees: “When people attempt to multi-task, what they are really doing is switching rapidly back and forth between tasks, what I call ‘switchtasking’. These switches

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cause people to lose time, and be incredibly less productive. Whenever multi-tasking is increased, the cognitive load is increased, too, and people will get cognitive fatigue.”

For children and adolescents who do not have a complete prefrontal cortex, the effects of “switchtasking” can be more noticeable and unsettling.

Kevin Donnelly wrote an article in a recent Australian paper called ‘Digital age is dumbing down our children’ and he too shares my concerns of too much of a good thing with our IT world.

The danger is that too much time spent playing computer games, watching screens and surfing the net damages the way we process information and the way we think. Unlike printed texts that require you to focus on the words, concentrate, read carefully and sit quietly, TV and computer screens are full of colourful graphics, ever-changing images, sounds and lots of movement. This step-by-step focus suits our brains much better than the rapid saturation of sensory exposure.

When reading a printed page, your eyes move from left to right following the words, with stops to process meaning, as you move systematically across and down the page. Reading a computer screen is different, as described by a U.S. researcher Jakob Nielsen.

Initially, reading a computer page is similar to reading a printed page. Your eyes move from left to right in a methodical fashion, but with computers, after a while, your eyes stop reading all the way across the screen and only read the left-hand side, moving vertically instead of horizontally.

When it comes to new technology, especially computer games, Susan Greenfield from Oxford University puts it this way:

“(The) environment has changed in an unprecedented way; it’s bombarding you with boom, bang and bang images, what I call the ‘yuck and wow’ scenario where every

moment you’re having something flash up in your face and bombard your ear.”

“My fear is that these technologies are infantilising the brain into the state of small children who are attracted by buzzing noises and bright lights, who have a small attention span and who live for the moment.”

No wonder teachers complain that students are unable to sit still for long periods and work quietly. The reality is that if young children have never spent time reading a book or been taught that learning requires concentration and effort, everything at school will have to be designed to be immediately entertaining.

Another area of concern is the reading deeply of books, particularly quality texts. Reading a novel or a poem requires concentration, weighing each word or sentence and using your imagination to enter the world created by the author or poet. We can all remember being so caught up when reading that it is almost as if we were there with the characters.

Professor Greenfield argues that today’s children are not reading as deeply, thus we are denying them the opportunity to merge with the characters and the story of good books. She argues that who we become is shaped by deep reading and we can learn so much about choices, character and even our moral code. If this is not happening as much, she believes we will raise a generation of children who will lack depth, originality and resilience. If today’s children keep doing the same things via the digital world, they will all be similar – maybe a world full of anybodies and nobodies.

One of the arguments for using computers is that learning will improve. Is that true or are we just accepting that it does without questioning what else may be happening?

Kevin Donnelly argues that research carried out on the results of international mathematics and science tests and examining why some countries and students do better than others suggests computers hinder learning.

European researcher Ludger Woessmann, who carried out an investigation into the Programme for International Student Assessment tests, says the “availability of computers at home is negatively related to student performance in maths and reading, and the availability of computers at school is unrelated to student performance”.

Woessmann makes the point that students can waste time on computers and the Internet (socialising, talking to friends, playing games). He argues that “availability of computers at home seems to distract students from learning”. Research into how young children learn best also tells us that instead of relying on calculators and computers, students need to strengthen their brain power by memorising multiplication tables, doing mental arithmetic and learning how to recite songs, ballads and poems by heart. This repetition, patterning and sequencing improves the brain’s working memory, and this will certainly support improved school performance.

One final concern with the digital classroom is who has done the homework or the assessment task? Given that much work done outside the classroom is emailed to teachers – how can we know the student has done the work? (Simple solution is to complete all assessments right there in class and printed and handed to teacher).

We cannot turn back the clock and reclaim life as it was and there is no doubt that technology is a daily part of our lives and that it brings many benefits both in our schools and lives. However, we need to keep it in balance with what the brain research tells us, and never forget the following in Kevin Donnelly’s words

Children have a very versatile, powerful and cheap computer with them all day, every day - it sits on their shoulders and it’s called a brain.

Make sure they use it. 