

Where to After the Digital Education Revolution?

Mal Lee

October 2012

What should schools, their principals and education authorities do when they recognise the 'Rudd monies' are spent?

What do they do if their laptop lease expires this year?

What lessons should be learnt from the 'Digital Education Revolution' (DER) experience?

The answer I suggest lies in recognising - if not already understood - that Australian schooling must finally move on from its Industrial Age mindset and traditional school technology resourcing model and its insular and paper based mode of schooling and adopt an outlook, an approach to resourcing and a form of schooling apposite for an increasingly digital and networked world.

The changing nature of the world requires us to rethink every construct we have about schooling in order to make it more relevant to the lives of students, to be part of their world not apart from it (Greg Whitby, Director Parramatta CEO).

In making that shift schools will recognise they not only have in their family homes ample personal digital resources for each child today but also a resource that will allow each child to continue using the current personal technologies hereafter at a reduced cost to the school and government.

It is now past the time when all should have appreciated that schools, like all other organisations, to remain relevant must adopt a form where they become an integral part of a networked world, employing a networked mindset that sees them collaborating 24/7/365 with their homes, able to evolve at pace, continually meeting society's expectations and where the digital, like in every other facet of life and work, is naturally infused into every operation.

All principals – and not just the pathfinders – have the responsibility of ensuring today's digital technology is being used astutely in the realisation of a school educational vision where the digital is used integrally, naturally and effectively in every facet of the school's operation.

When one in 2012 still has insular paper-based high schools that had to be warned that their use of DER laptops was less than 10% one can appreciate the challenge for many schools and their leaders.

In many respects the speed of societal and technological change has already consigned the laptop element of the Federal Government's 'Digital Education Revolution' to the history books.

That rate of change is going to escalate, continually impacting every facet of our lives, the workplace and the education of the young.

The children, and their parents have already normalised the use of the digital in the family homes to the extent that the use is almost invisible. It is a natural part of their learning and teaching everywhere but the classroom.

The children's homes reflect what is today's societal norm. Many of the nation's schools, the supposed place of learning, lag well below that norm. As Greg Whitby further notes:

We need to learn from the kids and identify what tools they are using and how they are using them and allow them to lead in technology adoption, underpinned by good pedagogy of course.

Recognise that Moore's Law is on track and that the kindergarten children starting school this year will on current projections graduate in Year 12 using computers with the power of the human brain.

The very considerable challenge for Australia's authorities and school principals is to position the nation's schools to readily and naturally respond to rapid societal and technological change, accommodate their client's ever-rising expectations and provide the apposite education.

They need remove the current pronounced home-school educational divide, understand the young use their own digital technology 24/7/365 in their teaching and learning, and that for 80% of that time they are provided no guidance or support by the vast majority of schools.

Australia's schools have to and can soon lift their contribution to the national productivity.

It is time, educationally and productivity wise the nation made better use of the largely untapped and underdeveloped resources and expertise of those homes and facilitated schools astute enhancement of the teaching and learning occurring outside the classroom (Lee and Ward, 2013).

The schools and authorities should move quickly to allow the market place to determine the choice of the student's personal technology, to sustain the currency of that technology and the software used for learning in and outside the classroom.

Forget the spin that tries to justify authorities selection of obsolete personal technologies that even Harvey Norman couldn't sell at 70% off!

Understand that the move to BYOT is inevitable (Lee and Levins, 2012) and that unintentionally the DER may well in many schools have assisted that development. Appreciate some school might transition via the BYOD path but ultimately all will make the move (Lee, 2012 a).

Facilitate that movement and remove the current plethora of human imposed impediments and make the inevitable that much easier to achieve.

Appreciate, as our research with the global pathfinders attests (Lee and Levins, 2012) (Lee and Ward, 2013) individual schools are best placed to address the ever –smaller number of equity concerns.

Understand that if Australia's schools genuinely collaborate with their communities and pool the combined resources of the school and the home all

have ample personal digital technologies and require no additional government monies.

Handled astutely all those schools can not only markedly enhance their resources but also save government significant recurrent monies (Lee and Ryall, 2010) (Lee and Levins, 2012).

Indeed one of the worst things the Federal Government could do is to provide schools any more money for the young's personal technology, except for those with special needs.

Rather let it continue to support the one vital but largely un-acknowledged success of the DER, the upgrade of the broadband access to the nation's classrooms. This is a vast, ever escalating challenge well beyond the scope of individual schools.

'Digital Education Revolution'

The Australian Labor Government's \$2.2 billion 'Digital Education Revolution' was well intentioned and the need for the nation to spend significant monies on technology on Australia's schools long overdue.

The Howard Government had done little or nothing to enhance the digital for the previous 12 years and the core technology and network infrastructure was falling markedly behind that of other developed nations.

A one-off infusion of monies was defensible.

The problem with the implementation of the Digital Education Revolution, aside from the obvious political spin was the mindset and the approach the Federal Government, and in turn its state and territory counterparts chose to use to address that shortcoming.

Why it chose to mount the program in only Years 9 – 12, the area of schooling where the research and experience revealed the digital was least used by teachers is bemusing to say the least.

What was not bemusing was the Government's choice of a classic 'silver bullet' solution, so maintaining a tradition of governments with school technology globally.

'Silver bullet' is a term coined by Thorp in 1998 to describe industry's propensity in the late 80's and early 90's to invest in the latest 'you beaut' technology in the hope that that technology alone would improve the business.

..the idea is that all you have to do is plug in the technology and magically the benefits will flow (Thorp, 1998, p21).

It was a 'shoot and pray' approach that not only wasted valuable scarce resources but also never achieved the desired outcomes.

Cuban (1986) and Lee and Winzenried (2009) in their examination of the use of instructional technology in schools in the last century noted that government and education authorities have been unsuccessfully employing the 'silver bullet' approach with technology from the installation of TV sets

onwards. Look around the world today and you'll still see the approach being used with schools, with the same waste, be it in Peru with its One Laptop Per Child 'disaster', in the US or with the DER.

The only one of the 'intended' benefits ever to be achieved from the approach is the short-term political gain, and even that might be debatable.

Writing in 2009, five years ago Lee and Ryall sadly identified all the now obvious failings of the 'silver bullet' approach being adopted with the DER (Lee and Finger, 2010, pages 114-117). They noted:

When one considers what the Australian family is already spending on all manner of digital technology annually and that the home has what it usually perceives to be better technology than the school, one suspects the Australian Government is going to find it hard to justify in 2013 making another massive outlay of around five to six billion dollars for the 2014–2018 period. And that assumes that the current investment in the Year 9–12 computers enhances teaching and learning in the school (Lee and Ryall, 2010, p 117)!

They also observed:

that no developed nation can afford to fund from the public purse the level of digital technology needed by schools in a digital and networked world over a sustained period, and that within a networked and collaborative world where the digital and educational capacity of the students' homes is largely untapped it is inappropriate to do so (Lee and Ryall, 2010, p110).

One would have hoped governments and their advisers would have learned from the mistakes of the past, and have heeded the many lessons apparent in the school and business worlds. Thorp (1998) succinctly enunciates, as Lee and Ward indicate in their article on benefits realisation that appears elsewhere in this edition, what is required of all organisations if they are to use the technology successfully to enhance their 'business', he noting:

While the application of technology had evolved, and its impacts have become far more dramatic, our management mindsets have failed to keep pace (Thorp, 1998, pxx).

Schools like industry before it have to shed their Industrial Age mindset where the technology is a 'bolt on' best left in the hands of the 'ICT experts' and adopt one appropriate for the networked world, and ensure the technology supports the 'business' of the school.

As Lee and Levins (2012) flesh out in *Bring Your Own Technology* not only did the Federal Government err in its adoption of the 'silver bullet' approach but it and the states and territories also erred in choosing to perpetuate the use of the 'ICT expert model', with all its inherent failings, to identify both the roll out strategy and the desired personal technology.

It is vital education authorities at all levels – national, regional and school - appreciate the very considerable shortcomings of that model and the many benefits financially, educationally and politically of leaving it to the market place and individual to choose the requisite suite of personal digital technology – hardware, software and apps.

Governments at all levels, and many a school has failed to appreciate that the greatest challenge in getting all teachers and students to normalise the use of the digital in the school is human, not technological.

The technology ought be the easy part.

It is very easy for government to indicate how much it spent and how many machines it bought but far harder to reveal what percentage of teachers actually used that technology in their everyday teaching. You'll find that information nowhere.

As indicated in previous articles achieving the whole school normalised use of the digital is imperative before one can even contemplate achieving any significant educational enhancement. That was never on the agenda nor was the ensuring that every one of Australia's teachers had the requisite tools to work with despite knowing that if the teachers didn't use the digital in their everyday teaching nor would the students.

In 1996 (Lee, 1996) I commented on the folly of society allowing schools to try and replicate the personal technology of the student's homes, noting:

It is time... to understand the technological needs of the home, to appreciate that schools must learn how to work within a networked world and to plan accordingly. Rather than seeking to replicate the resources of the home, consideration could profitably be given to developing models that marry the needs and resources of the home with those of the school (Lee, 1996, p40).

I accept I've clearly failed as a salesperson but one would have hoped seventeen years later governments at all levels might have recognised that imperative and would by now understand why so many schools and education authorities globally are adopting a model of BYOT and why inevitably all schools will make that shift (Lee and Levins, 2012).

What is the surprise is that more governments haven't appreciated the many political as well the economic and educational benefits of such a move (Lee and Levins, 2012, pages 36-45).

Fortuitously, and likely coincidentally, the Federal Government chose, outside the Digital Education initiative, to promote, with the support of all the states and territories, a national program to enhance the autonomy of all schools and give all a greater voice in their decision making and use of resources.

In time this could be even more important than the DER in facilitating the normalised use of the digital for it assists schools adopt technological solutions apposite to their unique context. The development ought logically lessen the 'control over', 'one size fits all' mindset of the system technology

managers and prompt the adoption of a model of technological support that has as its focus the individual school and facilitating each school's adoption of a technological solution appropriate to its situation.

That development is wholly consonant with the part of the DER package that has received the least mention, that is the most important and which has quietly and unobtrusively already yielded the greatest benefits – and that is the decision to work through the NBN to provide high speed broadband access to every classroom in Australia.

It was the initiative that Bernie Ryall and I (Lee and Ryall, 2010, p115) identified in 2009 as the key plank of the DER and as the area where the national government was best positioned to ensure the requisite infrastructure was, and continued to be, provided. Five years on the importance of this program is even greater.

The immediate challenge for governments, education authorities and school principals at all levels is philosophical and has to do – if not already done - with moving the control of the digital from the 'ICT experts', the 'mechanics' and placing it primarily in the hands of the school educational leadership such that the educational agenda shapes its use and not some middle level 'ICT expert' in or outside the school.

Benefits derived from the DER?

It would be difficult even for expert public relations units to laud the impact of the DER as planned on Australian schooling or dare to suggest that it brought about an educational revolution

The broadband element does however deserve to be lauded.

Australia's primary and middle schools directly received little or no benefits from the initiative.

There will be no discernible impact upon upper secondary teaching and learning that can be attributed to the DER and few long-term legacies. The final laptop issue will likely to be 'dead' within three years, assuming those issued haven't already been superseded by the student's own personal technology.

The 'Rudd' initiative was a lost opportunity, but where the failings have ultimately also to be shared by most of the states and territories, and their administrators and ICT experts. The latter were in a position to make much more of the considerable monies allocated.

That said if one was able to examine the benefits accruing in each of the schools involved there would be some important unintended benefits, particularly in those schools ready to make best use of the technology.

A significant percentage of Australia's schools have of their own volition and through astute school leadership been working for the last decade or more - with no government technology assistance - to normalise the use of the digital in all the school's operations.

Anecdotally they have been the schools that benefitted most, the extra and unexpected windfall providing a surge in the normalised use of the digital.

The other group of schools that would appear to have benefitted are those Y7-Y12 and K-12 schools with considerable autonomy that were able to redeploy their school technology monies elsewhere in the school and to ensure all the teachers had the requisite digital tools, to enhance their Wi-fi network and equip all classrooms with the desired IWBs, data projectors and related technology.

An unintended consequence ... is that these schools are now well-placed to go in new directions such as iPad technology, BYOT, cloud computing and so forth, because they have created a beginning culture of personal technology use (Dr David Gurr, Melbourne University).

The irony is the 'laptop' monies enabled many schools to markedly improve their stock of the instructional technology they actually wanted, IWBs.

The surge in Australia's uptake of IWBs corresponds very closely with the provision of DER funds, and in part with the Building an Education Revolution (BER) monies. Futuresource, the international data source for educational technology reports that between 2009 and 2012 the percentage of Australian classrooms with IWBs jumped from 28% to 55% (Futuresource, 2012).

A significant portion of that uptake of IWBs, particularly in the primary school was an unintended benefit of the BER with builders readily convinced to include IWBs and enhanced network 'plumbing' in the building upgrades.

The surge in the uptake of IWBs in turn, as the author contends in his article in *Technology, Pedagogy and Education* (Lee, 2010), markedly impacted on teachers move from paper to digitally based teaching and the whole school normalised use of the digital.

Another of the likely unintended benefits of the DER in those schools, ready or near ready to use the digital was that it hastened their readiness to move to BYOT. Many were able, in part through the DER monies, to adopt a whole school 1:1 computing program, enhance their network infrastructure and transition on to BYOT. In researching both *Bring Your Own Technology* (Lee and Levins, 2012) and *Collaboration in learning* (Lee and Ward, 2013) the whole school normalised use of the digital by all the teachers naturally inclines the teachers to collaborate with the homes and the school to adopt a model of BYOT.

Lessons learnt?

Most of those lessons have already been touched upon and although space prevents going into each in depth there are several that bear underscoring and one that has not yet been discussed.

One would hope – probably futilely – that politicians of all persuasions, educational administrators and principals would finally understand the folly of 'silver bullet' solutions.

Allied is the hope that the political advisers would reiterate the futility and inevitable significant waste associated with such moves and the appreciably greater political capital to be secured by politicians actively endorsing schools move to BYOT.

I say futilely because they have been doing it for near on 100 years, gadgets, not optic fibre cables are 'cool' and upon completing this article I received notification of a US school district that had launched a 'digital education revolution' based on the use of Google apps!

Linked is the importance of all the decision makers appreciating each school is unique, requires solutions apposite to its development and the autonomy to make decisions only those at that school can make. The 'one size fits all model' has long passed its use by date.

Allied to the abandonment of the 'silver bullet' approach is the necessity of all grasping that schools that have gone digital are now undergoing the kind organisational transformation that has been evident in the business and corporate world since the 90's and as such are becoming ever more integrated and complex organisations that forever will evolve at pace. Rapidly going are the traditional silo like structures and evermore success will be dependent on the astute addressing of suites of interrelated variables.

Schools globally currently have no tools to effectively adjudge the benefits being derived in such complex, integrated rapidly changing organisations. The traditional long term, program specific, invariably externally administered, academic model is next to useless.

The corporate world globally has opted to use what is variously known as the benefits realisation approach or BRM, benefits realisation management.

Elsewhere in this edition Dr Lorrae Ward and I contend schools will increasingly require an educational variant of the corporate approach that they can naturally use in-house to adjudge both intended program benefits and increasingly unintended benefits.

Where to from here?

In working with the central office and school leadership in Forsyth County (Georgia, USA) on that county's move to BYOT I was struck by the recognition by all that the way forward should be shaped by each school and its community with the education authority facilitating and supporting the schools.

That County leadership recognised by the mid 2000's the imperative of it abandoning the traditional Microsoft 'one size fits all' model and reconfiguring its operations to ensure each school always had the leadership, the requisite autonomy and infrastructure required to provide the desired education in an ever – changing environment.

Both the school principals and the office leadership understood the macro scene, the range of variables they had simultaneously to address, the ever-growing interrelatedness of those variables, the increasing organisational complexity and that genuine enhancement would only come from the astute addressing of suites of variables.

All appreciated the vast and growing digital technology in its homes that the use of those technologies was normalised everywhere, except in the classroom and the folly of not making use of that technology.

The County understood that if the schools collaborated with their homes there would continue to be ample personal technology.

Bailey Mitchell, the system's head for the County (Lee and Levins, 2012) appreciated his greatest challenge would be continuing to provide the schools the bandwidth and Wi Fi access they required as the level of student usage of the digital escalated, the files grew ever larger and the students required as near as much up speed to the cloud as they did download.

Let me hasten to add the county is not typical of the US as a whole.

That model in microcosm is what Australia needs nationally.

The Federal Government should continue its work in seeking to provide ever-greater bandwidth to the nation's classrooms.

The school devolution movement needs to be continued with each school being accorded the trust, autonomy and responsibility that will allow each to meet society's educational and digital expectations.

That in turn requires the national; state and territory governments to adopt a networked mindset that lessens the 'control over approach' by the central office and most assuredly by its 'ICT experts' and has all adopt a far more facilitative and supportive role. It is appreciated a number are well along that path but there are cells very reluctant to cede any power.

As will be explored in the next edition the way forward requires astute school principals with the knowledge and wherewithal to lead tightly integrated digital schools.

The national quest, articulated from on high, and daily expressed and supported by the school leadership is that every one of Australia's teachers should by now have normalised the use of the digital in their everyday teaching.

Only then can Australia begin contemplating the possibility that the digital technology when coupled to an astute school educational vision, supportive learning culture, a recognition that learning occurs 24/7/365, a parent community willing to collaborate, apposite curriculum, teaching and student assessment and an in-school process that constantly measures the benefits accruing will significantly enhance each child's learning.

It is time to proclaim and recognise schools, small and large are highly complex human organisations that are becoming ever more complex in their organisational transformation as they begin shedding their insular silo like form, dismantle their school walls, actively collaborate with their community and integrate their operations.

Conclusion

There is no place for simplistic 'silver bullet' political fixes in that environment.

Thorp writing of industry in 1998 tellingly observed

In today's complex world very few things worth doing are easy (Thorp, 1998 p54).

After being involved as a student and active participant in school change at the school and system level for close on fifty years and having noted how quickly the dents that were made in traditional structures were removed it is delightful to evidence in the pathfinding schools and education authorities the fundamental educational transformation occurring. Those schools are irrevocably changing the nature of the schooling being provided. They have infused into all their operations the normalised use of the digital and positioned themselves to evolve naturally at pace meeting their home's ever-rising expectations.

While yet still small in number they are revealing the way forward.

That said the gap between the nature of the education provided by them and those still ensconced in their Industrial Age paper based model is growing at pace.

The challenge for government and the leadership of the schools is to support the pathfinders in their journey while facilitating the other schools movement into the digital and networked world with the existing resources.

Bibliography

Cuban, L (1986) *Teachers and Machines* New York Teachers College Press

Futuresource (2012) Personal correspondence

Lee, M (1996) 'The Educated Home' *Practising Administrator* Vol 3 1996

Lee, M and Winzenried, A (2009) *The Use of Instructional Technology in Schools* Melbourne ACER Press

Lee, M (2010) 'Interactive whiteboards and schooling: The Context *Education, Pedagogy and Technology* August 2010

Lee, M and Finger, G (eds) (2010) *Developing a Networked School Community* Melbourne ACER Press

Lee, M and Ryall, B (2010) 'Financing the networked school community: Building upon the home investment' in Lee, M and Finger, G (eds) (2010) *Developing a Networked School Community* Melbourne ACER Press

Lee M and Levins, M (2012) *Bring Your Own Technology* Melbourne ACER Press

Lee, M and Ward, L (2013) *Collaboration in learning: Transcending the schools walls* Melbourne ACER Press

Thorp, J (1998) *The Information Paradox* Toronto McGraw-Hill