

The Educational Fallacy of an ICT Continuum

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Teachers, schools and curriculum authorities globally have and are continuing to promote the educational importance of all students learning how to use the digital technology by studying a common K-12 ICT continuum.

With due deference to all those esteemed folk and bodies I'd like to suggest their thinking is dated, fallacious, educationally inappropriate and economically wasteful in an ever evolving, digitally based 24/7/365 socially networked environment where increasingly sophisticated technology and users are daily transforming the nature of learning, teaching and schooling. It is not the expert to novice learning continuum that is the concern, rather it is its application to digital technology.

The use of the ICT continuum is based on the belief that

- the young have to be taught how to use digital technology
- the instruction is best undertaken in a rational linear manner
- only professional educators, expert in the area can do the teaching
- the teaching should only occur and be recognised within a physical place called school, using a K-12 syllabus designed by the 'ICT experts'
- those curriculum designers can identify the desired subject matter for 13 years of schooling
- the subject matter can be chunked and taught in segments out of context in a controlled roll out over a protracted period

There is also the premise that

- all schools are basically the same, at the same evolutionary stage in their use of the digital technology
- all teachers and schools should use the one common, 'one size fits all' continuum
- lastly but by no means least, there is a discrete learning domain called 'ICT' within which it is possible to identify the core elements the young will need to learn as they move from novice to expert standing.

The reality is that schoolteachers have had miniscule impact on the world's uptake and learning of how to use the digital technology and are on track to have to even less impact. Perelman in 1992 noted that of the 50 million people then using computers only a minute fraction had been taught to do so by teachers. The International Telecommunications Union (ITU, 2014) estimates that there is 2.3 billion mobile – broadband subscribers using increasingly sophisticated hand held computers of some type, with 55% of those subscribers being within the developing world. Once again the schoolteachers of the world have played virtually no part in developing the digital competency of those billions of people, nor have they in assisting the now half of Australia's population that are using highly sophisticated smartphones or the millions using all manner of other digital technology be it tablets, PCs, Wi

Fi, PVRs, MP3 players, the social media, apps, digital cameras, video games, digital television or that in their car.

The world, and in particular its young are demonstrating daily that school teachers play scant part in teaching the current or future generations the general workings of the burgeoning, evermore sophisticated digital technology. Indeed one has only to look to the Pew Internet research (Purcell, et al, 2012) to note how low on the list teachers rate compared to the likes of Google, You Tube and peers when the young seek support on the use of the digital.

The irony is that while laying claim with the ICT continuum to teaching the nation's young about the digital the vast majority of schools in the developed world (Maher and Lee, 2010) still ban the use of the children's own mobile phones, the personal digital technologies they use naturally 24/7/365, strongly filter the young's use of Net and base their teaching on the premise that the students and parents can't be trusted with technology and that the school ICT experts need to decide which digital technologies are appropriate for education and to strictly control that technologies use.

Over the last twenty plus years, in particular since the advent of the Net schooling globally has in general dropped the ball badly in relation to playing a significant and lead role in the young's use of the digital. While there have been the exceptional pathfinder schools and education authorities most have in that time taken a negative, almost paranoid approach to the use of the digital and have sought to cocoon and protect the children from the 'evils' of the digital and networked world.

What most educators failed to see was that 80% of the children's learning and teaching time was outside the school walls and that the young, with the support of their parents would use the increasingly sophisticated digital technology largely unfettered 24/7/365 in every facet of their lives. In that laissez-faire digitally based environment, where the use of the digital was seen by most teachers as play, disjointed in nature and at times chaotic there soon emerged a remarkably common, universal suite of attributes and mores within the young of the world, who adopted a very different approach to learning and teaching than that used by schools.

Out of the seeming chaos evolved a distinct mode of teaching and learning apposite for a constantly changing, often uncertain, but immensely exciting and ever evolving digital and networked world; an approach that in contrast to the schools empowered each young person and gave them considerable control over their own education and lives.

It was non linear in nature, strongly impacted by the context, that honed in on the task at hand, which made extensive use of peer and networked learning and that ironically was strongly constructivist in nature (Tapscott, 1998). In 2000 the author wrote of that non linear mode of learning and the order emerging out of the seeming chaos (Lee, 2000), on reflection unaware of the writing of Pascale, Milleman and Gioja (2000) at the same time on *Surfing on the Edge of Chaos* that identified the profound impact the digital and networked operational base upon the remarkably similar evolution of complex organisations globally.

The approach taken by the youth of the world outside the school walls is basically how all the peoples of the world learn to use the general workings of the ever evolving, ever changing digital technologies. Yes, on many, many occasions there will be immense value in a 'teacher' of some type assisting the learning but as you reflect on your own use of the digital and how you manage to stay current with the latest technology you'll appreciate you basically teach yourself, in context, anywhere, anytime and use that technology you find apt for the task at hand, only occasionally calling on a friend, loved one or as Nicolas Negroponte (1996) astutely observed your children. Indeed as the technology has become that much more sophisticated and intuitive and the help facilities refined even that need is likely declining.

You undertake that learning while doing, in the train, taking a photo of your kids, in the workplace, in the coffee shop talking with friends, in front of the TV and just occasionally with a 'teacher'.

Significantly you integrate that learning and self teaching into the wider ecology, synchronising the learning across your suite of digital technologies, applying the skills learnt with other digital tools probably never thinking for a moment whether what you are doing is personal, educational or work related, such is the way with ever greater digital convergence and the demise of the old demarcation boundaries.

Importantly you tailor your learning to your particular needs, becoming competent in the operations you require, using technology that suits your situation and organising your files in the way you wish, in the process leaving untouched the myriad of apps and facilities you deem irrelevant.

In brief you tailor your learning of the technology to your needs, as have the young of the world outside the school walls.

This mode of learning has enabled you like billions of others, including the very young globally to normalise the use of the digital. Indeed digital normalisation is virtually the norm everywhere throughout the developed world except within its schools, the designated place of learning.

While there are a handful of pathfinder schools globally that have achieved digital normalisation most lag well behind general societal use. The factors why are many and complex but have in large to do with the premises underpinning the quest to create and teach to a common ICT continuum.

Most teachers, education authorities and even governments seemingly still have difficulty imagining people and in particular young people might best learn to use the technology of their own volition, in a non linear manner, in context, as the need arises, with the support of their peers and with the technology each person finds most appropriate. As indicated there is still the strong propensity for most teachers to think within the traditional insular paper based Industrial Age mindset and to envision real learning can only happen within the classroom under the control of qualified teachers. Any out of school use of the digital is mere play, unworthy of any recognition.

They appear to have not yet observed the global digital revolution, nor the shift of all manner of organisations – including schools - to a digital and

networked operational base that will see those organisations forever evolve and change in form.

It might help if those educators visited the early childhood classes of those schools that have normalised the use of the digital, where the children are using in class the personal technologies they use 24/7/365 and observe how naturally they apply their understanding of their chosen technology in authoring e-books, recording audio and musical tracks, in shooting and editing the desired images, downloading material from the Net, exchanging files via Dropbox as part of their group project.

The question that immediately came to mind in watching these children was how would they apply the digital technology in their graduation year in 2026 where Moore's Law is suggesting they will be using technology with a computer processing power 150 times greater than now and will have use of computing systems 350 times more sophisticated (Helbing, 2014).

That said, it needs to be understood that the aforementioned is only happening in schools at the Digital Normalisation evolutionary stage, schools that have created an ecology that recognises the 24/7/365 learning of the young, that builds upon their out of school learning, that trusts and supports the children's use of their own technology and which appreciates that the school no longer needs teach the children how to use their chosen technology and which should instead focus on applying that functionality in higher order teaching.

These schools, these early childhood children have no need of an ICT continuum, merely a desire in every area of learning to capitalise upon and nurture each child's growing digital proficiency.

Most schools are years away from reaching this higher order mode of teaching.

What however this very real example underscores is the fallacy in assuming that

- all schools are the same and that regardless of their evolutionary position should use a common 'one size fits all' ICT continuum, and that
- curriculum designers can divine the desired content of a K-12 ICT continuum apposite in 5 - 10 years time.

As the history of 'computing/ICT' syllabus design will attest as one looks back at the last 30 plus years all one can do is take a snap shot of the moment, and whether the the time required learning how to use mark sense cards, DOS, HTML, Microsoft Office or the current suite of apps and Web 2.00 applications. The author well remembers a 2008 - 2009 technology curriculum design project that had it efforts superseded a year later by the release of the iPad and the associated apps. Out of interest look at this example of a supposedly current and relevant Y6 computer skills assessment - [www.http://www.schools.nsw.edu.au/learning/k-6assessments/csa6ictskills.php](http://www.schools.nsw.edu.au/learning/k-6assessments/csa6ictskills.php)

A major educational shortcoming of any 'ICT continuum' is the lack of clarity of what is 'ICT' and the absence of any clearly identifiable learning domain that one finds with subjects like history, mathematics, psychology, physics or computing science. Undertake a Google search of the term 'ICT' and you'll find all manner of meanings from the broad to very narrow, the ever evolving nature of the term and the pronounced propensity since the mid 2000s for 'ICT' to disappear from the literature and to be replaced by the term 'digital technology' (Lee and Winzenried, 2009). At various iterations information and communication technology (ICT) included the study of both analogue and digital technologies, and throughout the term has for some reason excluded the study of many of the most popular modes of 'ICT' namely the cell phone, television, film, radio and the games technology, a decision that is becoming increasingly difficult to justify as the digital technology becomes evermore convergent and those facilities are included on virtually all popular digital technologies.

While it is important to clarify the terminology it is also vital at the same time to sort out what should be taught in relation to the digital technology by whom, where and when in an ever evolving increasingly networked world where the young learn 24/7/365 and where the evermore sophisticated digital operational base is fundamentally changing the nature of schooling and learning.

Serious consideration and discussion time needs to be given to how developed societies educate their young to best use and build upon the surging sophistication and power of the digital technology.

Conclusion

Schools generally have as indicated accommodated the digital revolution poorly, have fallen well behind the young, their homes and society in general in the normalised use of the digital and in seeking to oblige all children to undertake a dated, fallacious 'one size fits all' 'ICT continuum' will take schooling evermore out of touch with the billions successfully normalising the astute use of the digital, while wasting scarce and better deployed teaching resources.

Fortunately the pathfinder schools and education authorities understand the type of 24/7/365 learning and teaching desired.

The hope is that their lead, the reality 2.4 billion users and the decision-makers reflection on their own digital learning and teaching will see the dropping of the K-12 ICT continuum and the adoption of a more apposite approach.

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