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School 2.0 – rethinking the future of schools in the digital age

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Abstract

What future is there for formal schools and schooling in an increasingly digital age? Are educational technologists justified in arguing for the re-construction of school processes and practices along digital lines? Do contemporary digital technologies simply render the educational institution entirely obsolete? This paper outlines – and then critiques - the radical forms of digital 're-schooling' and 'de-schooling' that are often argued for within current academic debates over educational technology community. Instead the paper explores a number of opportunities for using digital technologies to work with schools as they currently are, rather than against them. In particular an 'agenda for adjustment' is presented that, if implemented, could see schools revitalised as sites of innovative, imaginative and empowering digital technology use.

Keywords: School 2.0, technology, reschooling, deschooling

Introduction

Digital technology is often described as having the potential to support distinctively new and improved ways of doing things. This is especially the case when people talk of technology use within organisations and institutions. Digital technologies are seen to be capable of having a profound impact on the ways in which most modern-day organisations and institutions go about their business, from transnational corporations to individual households. The last twenty years or so saw a growing enthusiasm from academic, political and popular commentators alike for the ways in which digital technologies appear to be 'flattening out' organizational hierarchies and structures (see Castells, 1996; Friedman, 2007; Leadbeater, 2008a; 2010). The institutions and organisations of the twenty-first century are now often described as operating in more open and 'networked' ways than before – largely driven by the increased use of computerised and telecommunications technology.

Changes such as these would appear to be evident in many different aspects of how contemporary organisations operate – from matters of finance and logistics, through to communication and decision-making structures. This digitally driven 'reorganisation' is also seen to influence how individuals engage with and experience the institutions and organisations in their lives. As William Mitchell reasons:

> "Once, we had to go places to do things; we went to work, we went home, we went to the theatre, we went to conferences, we went to the local bar - and sometimes we just went out. Now… high capacity digital networks … deliver information whenever and wherever we want it. These allow us to do many things without going anywhere. So the old gathering places no longer attract us. Organisations fragment and disperse" (Mitchell 2000, p. 4).

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Mitchell's analysis would seem to hold true across most organised aspects of everyday life. For example, many people now experience very different ways of interacting with banks, government services, retail organisations and their places of work. As Mitchell implies, the technologically supported provision of entertainment and leisure is also noticeably more fluid and 'client-centred'. Yet it could be argued that the organisations and institutions that relate to education have displayed less obvious evidence of change over the last few decades. As Dan Lortie (2002, p. vii) reflected at the beginning of the 2000s, "education does not change at a rapid pace – the major structures in public education are much the same today as [thirty years ago]".

Having reached the 2010s, there is little reason to disagree with Lortie's observation of educational inertia. In particular, many people would argue that a slow pace of change is especially evident with the 'traditional' institutions of education – not least the school. In this paper we shall consider the significance of educational institutions in contemporary education. How can educational institutions such as the school be said to be coping with the demands of digital technology? Is there a continued need for formal institutions in education? Does digital technology in fact render the educational institution obsolete?

In addressing these questions, we need to consider all of the formal and informal elements of 'the school' – in other words, we need to approach schools and digital technology both in terms of structure and in terms of process. For example, with regards to defining the 'structure' of schools, most people would think of the material aspects of schools as places – i.e. their buildings, corridors and classrooms. Yet schools are based around a range of social and cultural structures - including the hierarchical roles that people assume within the school organisation, the hierarchies of knowledge that constitutes the school curriculum, and the organisation of time that constitutes the school timetable. All of these structures – although often out-of-sight and rarely talked about – are integral elements of the organisation of schools and schooling. Similarly, with regards to the 'processes' of schooling most people would immediately think of explicit processes such as teaching, learning, communication and decision-making. However, schooling should also be seen as involving more implicit processes of socialisation, regulation and control. All of these processes and structures highlight the fact that schools should certainly not be seen simply as neutral contexts within which digital technologies are implemented and then used. Instead, we need to consider how digital technologies 'fit' with these structures and processes. How do digital technologies complement or challenge the established processes and structures of school organisation? In what ways do digital technologies appear to support the 'reconstitution' of schools and schooling?

Technology and the reconstitution of schools and schooling

In exploring the relationship between technology and the structures and processes of schools and schooling we should first consider the ways in which digital technology is being used around the world to reconfigure the nature and form of educational institutions. These efforts tend to take three main forms. The first is the use of digital technology to represent the structures and processes of school – what is often referred to as 'virtual schooling'. Secondly, is the use of digital technology to reconstitute the structures and processes of school - what can be referred to as a digitally-driven 'reschooling'. Finally, is the use of digital technology to replace the structures and processes of school altogether - what can be termed a digitally-driven 'deschooling'.

Technology and virtual schooling

There is a relatively long history of using technology to set the provision of schooling free from the physical and spatial confines of school buildings, while retaining the major structures and processes of schooling such as curriculum, assessment and certification. Throughout the 1990s and 2000s a large number of internet-based virtual schools were established to provide online 'out-of-school' schooling. Perhaps the most widespread use of the internet to provide institutional support and provision of teaching and learning has occurred in the United States. One of the first major instances of this was the now defunct 'Virtual High School' programme. This programme was sponsored by $7.4million of federal funding and, at its peak, boasted students from ten countries. From these beginnings a large majority of US states now operate online learning programmes for children and young people involved in compulsory schooling. Many states support individual 'cyber schools' as well as having district level online programmes where between 20 to 80 percent of a student's academic instruction can be delivered via the internet (Watson et al., 2008; Ellis 2008). In this way, it is estimated that over one million US school students will take online courses alongside their classroom lessons each year (Means et al., 2009).

These forms of virtual schooling provide online access to conventional schooling that directly replicates the curriculum and culture of traditional 'bricks and mortar' schools but is not delivered in a physical institution. Other forms of virtual schooling include complementary or 'secondary-credit' provision that adds to – rather than replicates – face-to-face schooling. One prominent example was the Australian 'Virtual School for the Gifted' programme that operated during the 2000s. This programme used remote online tuition to offer supplementary learning opportunities for so-called 'gifted and talented' students who were considered to be under-challenged intellectually by their conventional schoolwork. Other prominent instances of complementary virtual schooling include the publically provided and corporately sponsored online 'resource provision' that are now established in many countries. One example of this form of virtual schooling is the British Broadcasting Corporation's highly popular ByteSize revision materials in the UK. A similar commercially-provided equivalent is the fast food chain McDonald's provision of subsidised online tutoring programmes to secondary school pupils in Australia (Curtis, 2009). As with 'official' virtual school provision, these programmes offer an online means of helping school students engage with aspects of their schooling without attending a school.

These forms of virtual schooling are often justified as introducing the benefits of market efficiency and competition into compulsory school systems. As the brief examples provided above suggest, virtual schools tend to be run by a variety of providers – from school districts and universities, to private companies and corporate commercial entities. Growing numbers of commercial companies also act as vendors for the delivery of courses and the licensed use of course materials. This 'learning marketplace' is bolstered by the wealth of content developed by educators and schools themselves. All told, virtual schooling is seen to make school systems more diverse and more competitive. Besides these system-wide improvements, proponents of virtual schooling also celebrate the benefits of choice and flexibility for the individual learner. For example, virtual schools are seen to provide individual instruction that better meets the specific needs and learning styles of students. Virtual schooling is seen to allow flexibility in terms of scheduling and place, as well as expanding educational access to individuals and groups who would otherwise be unable to engage in high quality learning in specific subjects. While some students (or their parents) will actively choose virtual schooling, these methods are also seen to play a compensatory role for students who are physically unable to attend 'bricks-and-mortar' schools. As such

virtual schooling is justified as a ready alternative for students who have long-term illness, have been excluded from school or where schools are considered as unsuitable for them to attend.

Technology and reschooling

Whereas virtual schooling takes place outside of the conventional school, another approach has been the use of technology as an impetus to 'remix' the major structures and process of schooling within the physical and spatial confines of the school. This technology-driven reconstitution of the school can be referred to as a digitally-driven 'reschooling'. In other words, although the school may look the same from the outside, what goes on within it may be substantially different from before. Of course, efforts have long been made at the margins of educational systems to reconstitute and reconstruct the school. Throughout the twentieth century a number of high-profile 'experimental' and 'free' schools such as Summerhill, Fernwood and the Vancouver New Schools all attempted to reinvent the structures and processes of schooling. Now digital technologies are seen to allow for the wide scale reconstitution of educational institutions across entire school systems – albeit in less radical and overtly political ways.

Many of these proposals for 'digital reschooling' involve the reconfiguration of curriculum and assessment. For example, efforts have been made in many countries to design new forms of digitally-driven assessment to support learners– especially in terms of assessing areas of learning such as decision-making, adaptability and cooperation. Attempts have been made to develop technology-based forms of 'peer assessment', as well as collaboratively produced work. Steps are being taken in countries such as Denmark and Norway to allow pupils full access to the internet during school examinations. Similarly, in terms of reconstituting the school curriculum, many educationalists are striving to find ways of foregrounding technology-based practices of collaboration, publication and inquiry within the classroom. Current discussions in the academic educational technology literature will often conclude with proposals and manifestos for the redefinition of curriculum and pedagogy – sometimes through radical models of 'mash-up pedagogy' and a 'remix of learning' (e.g. Fisher & Baird, 2009; Mahiri, 2011).

Besides issues of curriculum and assessment, attempts are also being made by some academics to recast education institutions as sites of technological exploration. An obvious area for change here has been the remodelling of the physical boundaries of schools to fit with the needs and demands of modern technology. From William Mitchell's (1995) suggestions for a 'recombinant architecture' in schools, to proposals for the re-design of the school environment into 'collaboration-friendly' and 'really cool spaces' (e.g. Dittoe, 2006) the idea of redesigning and rebuilding the physical environment of schools to better accommodate digital technology use continues to gain popularity and support. For example, it has been suggested that the planning and design of new schools is less rigidly 'zoned', with schools becoming'learning spaces' that are 'blended' in with other spaces and sites within the community (Harrison, 2009). All told, the reconstitution of the physical work environment of the school to accommodate the demands of digital technology use is seen to be long overdue.

Technology and deschooling

While these ideas of reschooling and virtual schooling have obvious merit, other academics, educationalists and technologists have chosen to pursue an even more radical agenda of

change – what can be termed the digitally-driven 'deschooling' of society. From this perspective, digital technology is seen to offer a means of escaping the physical and spatial confines of the school, as well as providing an alternative to the major structures and processes of schooling such as curriculum, assessment and qualifications. These forms of technology-based deschooling take a variety of guises. For example, a growing number of online institutions now exist that are based on an ethos of using digital technologies to bypass traditional education institutions. This approach is evident in online services such as the *School of Everything*. This is a prominent online space in the UK designed to put people in the community who wish to 'teach' with people who wish to 'learn'. This form of teaching and learning exchange has therefore been described as"an *eBay* for stuff that does not get taught in school" (Leadbeater, 2008b; p. 26).

Digital technology has also been used to further support and extend the 'home schooling', 'unschooling' and 'self-directed learning' movements where children and young people are educated by family and community members. For example, the 'Free World U' has been developed as an online alternative learning community for home-schooled young children – offering online 'accelerated learning' resources to be shared between communities of parents and learners. The development of online alternative schooling is an increasingly significant part of the efforts of neo-conservative and fundamentalist religious groups in the US to support alternative forms of home-schooling outside of state control of the curriculum (Peters and McDonough 2008). As Michael Apple observed at the beginning of the 2000s, "there are scores of websites available that give advice, that provide technical and emotional support, that tell the stories of successful home schoolers, and that are more than willing to sell material at a profit" (Apple, 2000; p. 71).

Reasons for the technology-driven redefinition of schools and schooling

Although all of these examples challenge the traditional concept of 'the school', in a practical sense they remain on the periphery of contemporary educational provision. For the time being, at least, the main significance of such efforts is symbolic rather than substantial. As such it is worth considering the implications of the ideas and arguments that underpin these examples in further detail. All of the examples covered in this paper certainly reflect a strongly-held belief amongst some academics and educational technologists that profound and significant changes to the organisation and arrangements of schools and schooling are imminent. Arguments along these lines are made regularly and forcefully in educational technology discussions and debate – especially by academic commentators. Take, for example, this reaction to the launch of Apple Computer's 'iPad' tablet computer from a prominent 'Professor of New Media Environments' in the UK:

> "This is the beginning of what I like to describe as post-appropriation technology: devices that won't be appropriated by education in the way that calculators, or laptops, or networks were. This device won't be easily banned, won't be 'moulded' to fit education, and will be hugely effective as a web browser, bookshelf, video player, game console and communication device. This time, instead of technology being bent to fit schools (as with the interactive whiteboards for example), schools must move themselves to meet the new technology. That makes this a significant moment …This is a wake-up call for ICT assessment in schools: it's time to move it into the twenty-first century" (Stephen Heppell, in Johnson and Arthur 2010, p. 3).

Of course, Stephen Heppell is not the first academic to see the educational implications of technology in this way. As Larry Cuban's (1986) analysis of the history of twentieth century technologies in the US school system demonstrates, there is a long tradition of strongly

enthusiastic reactions to 'new' technological artefacts and, on occasion, such predictions may well be justified and prescient. Yet statements such as 'schools must move themselves to meet the new technology' and 'it's time to move schools into the twenty-first century' suggest a specific dissatisfaction and distrust of formal educational institutions. In fact it could be argued that much of the current discussion and debate about education and technology is tinged with an underlying 'down with school' sentiment. We therefore need to ask why this is, and whether such reactions are justified?

Looking back over the recent academic literature on education and technology (or to be more accurate, the English language academic literature), it would seem that people's enthusiasms for different forms of schooling are usually driven by two inter-related beliefs. First is the widely-held assumption amongst some academics and technologists that digital technology offers a better way of 'doing education' – what could be referred to as a technological 'pull' factor. Secondly, is a general dissatisfaction with current types of schools and schooling – what could be described as an institutional 'push' factor. Together, these beliefs can be seen as underpinning most people's desire for the technology-driven redefinition of schools. In the spirit of all our other discussion up until now, it therefore makes sense to give further consideration to the ideas, beliefs, values and agenda that inform these arguments. Is the school as it currently stands really a dysfunctional institution? Do digital technologies really offer a better way of organising and providing educational opportunities?

Technology as a better way of 'doing education'

One recurring theme throughout the educational literature is the assumption that digital technologies offer as a ready means of supporting better forms of teaching and learning than can usually be found in formal educational settings. Technology-based education is seen to provide a more conducive way than 'traditional' schooling to facilitate the informal, collective and communal forms of learning that many educationalists believe to be important. Some people therefore reckon digital technology to be capable of superseding the educational opportunities that can be provided by schools and other formal institutions. This is not to say that technology-driven provision will necessarily replace formal education institutions. Nevertheless, digital technology is certainly seen as able to fulfil many of the same functions and roles. As Allan Collins and Richard Halverson reason:

> "We see the question of where education is headed in terms of the separation of schooling and learning. We're not predicting the collapse of your local elementary school. Young people will not be forced to retreat behind computer screens to become educated. Rather, we see the seeds of a new education system forming in the rapid growth of new learning alternatives, such as home schooling, learning centres, workplace learning and distance education. These new alternatives will make us rethink the dominant role of public schools in education as children and adults spend more time learning in new venues" (Collins & Halverson 2009, pp. 3-4).

This enthusiasm for digital technology supporting a set of 'new alternatives' to the school reflects a number of beliefs and values about what education should be. Firstly, many people's interest in the technology-based reconfiguration of schooling reflects a belief in increased individual freedom. As can be seen throughout the educational technology literature, many people are convinced of the capacity of digital technologies to make education more flexible, fluid and ultimately more empowering for the individual learner. For many commentators it therefore no longer makes sense to retain 'pre-digital' models of organising learning through institutions that are focused on the rigidly hierarchic mass

delivery of static content. Instead, people are now beginning to question how best to develop forms of learning that can be negotiated rather than prescribed and discovered rather than delivered. More often than not, digital technology is seen to provide a powerful means of supporting education that is driven by individual learner needs and based on learners taking control of managing and accessing knowledge for themselves (Facer & Green, 2007).

In this sense, growing numbers of authors are now discussing the value of what Jonathan Edson (2007) terms 'user-driven education' – i.e. allowing learners to take an active role in what they learn as well as how and when they learn it. Of course, this 'pick and mix approach' to curricular content and form presents a challenge to the professional roles, identities and cultures of teachers and other educators. It also presents a fundamental challenge to the concept of the formal educational establishment as a whole. As McLoughlin and Lee (2008; p. 647) conclude, all of these ideas and arguments imagine a radically different education system – one where "learners are active participants or co-producers of knowledge rather than passive consumers of content and learning is seen as a participatory, social process supporting personal life goals and needs".

These enthusiasms are often coupled with enthusiasm for the power of 'informal' learning – i.e. learning that takes place outside of the control of the formal education system. Digital technologies such as the internet and mobile telephony are seen as especially conducive to informal learning through their ability to support enhanced connections between people, places, products and services. Above all, technology-supported informal learning is seen to be more empowering in comparison to formal schooling, with young people able to learn in spite (rather than because) of their schools (Ito et al., 2009). As Nicole Johnson concluded from a study of Australian teenage 'expert' technology users, with informal learning …

> "… the [students] were able to choose what they learned and when they learned. They viewed the medium in which they did it as a form of leisure. They were also able to choose who and what they learned from – not just what has been set up as exclusive and privileged. They were able to both learn and receive pleasure from their engagement and not have to be concerned about the hierarchisation and failure in relation to how traditional schooling determines competence" (Johnson, 2009; p. 70).

The school as a dysfunctional technology

As this last quotation implies, much of the enthusiasm for the power of technology-based informal and collective learning is often accompanied by a complementary set of concerns over the failings of 'traditional schooling' and formal school systems. Of course 'school-bashing' occurs throughout all aspects of educational debate and is by no means a recent phenomenon. The rise of mass education throughout the twentieth century was accompanied by trenchant critiques of 'the school nightmare' and accusations of schools causing intellectual 'death at an early age' (see Gross & Gross, 1969). Many of these critiques centred on fundamental issues of knowledge, relationships, diversity, community engagement and social justice (e.g. Postman, 1996). More recently these long-standing discontentments about schools appear to have been amplified and accelerated by the rise of digital technology. In many ways, digital technology now provides a high-profile filter for many long-standing criticisms of formal educational institutions. Support for technology-related changes to education is therefore driven more by the 'push' factor of the supposed inadequacies of the formal educational institution rather than the 'pull' factor of technology's promise.

Criticism of the failings of contemporary forms of schools and schooling is varied. In a technological sense, it is argued that schools as they currently stand do not offer an adequate context for 'doing technology' properly. The conclusion reached by many commentators is that schools, at best, assimilate and incorporate digital technology into their existing practices and processes. As Wilhelm (2004; p. 3) puts it, schools' technology adoption can be seen as being "largely hewn to established practice". Many people therefore see schools as unable or even unwilling to respond to the more radical demands of digital technology use outlined earlier. Schools are seen to be stuck in a position of lacking what it takes "to go with the technological flow" (Dale et al., 2004).

As far as many commentators are concerned, the extent of the technological intransience of schools is considerable. For instance, many school buildings have been criticised as being architecturally unsuitable for widespread networked and/or wireless technology use. School leaders and administrators have been accused of lacking the required 'vision' to make the most of the educational potential of digital technology. School curricula have been observed widely as being too rigid and entrenched in 'pre-information age' ways of thinking. School assessment procedures are seen to be overly concerned with the development and assessment of scholastic aptitude rather than 'softer' or creative skills.

These criticisms often focus on what is seen as the rigid organisational arrangements and social relations within schools. A perennial concern amongst many academics, technologists and policymakers relates to the apparent incompatibility between digital technology and what has been variously termed the 'industrial-era school' (Toffler, 1970) or the 'Henry Ford model of education' (Whitney et al., 2007) – i.e. a school system that is based around the needs of mass production and centralised factory-like workplaces. Many educational technologists therefore continue to denounce the industrial-era school as a profoundly unsuitable setting for the more advanced forms of learning demanded digital technology and the 'knowledge society' (e.g. Miller, 2006; Warner, 2006). As Frank Kelly and colleagues were led to proclaim in frustration:

> "schools must change … the world we live in has fundamentally changed. Our students have moved into the Information Age. Meanwhile, our high schools continue to operate on the ideas and assumptions from the Industrial Age. As a result, there is a fundamental disconnected between students and the schools they attend" (Kelly *et al*. 2008, p. 9).

Such criticisms are as diverse as they are damning. At one extreme, very little that takes place within a school is seen to be of particular relevance or use to modern society. In particular, schools' continued reliance on 'broadcast' pedagogies of various kinds, their structured hierarchical relationships and formal systems of regulation are all seen to render them incapable of responding adequately to the challenges posed by digital technology. All told, many people simply do not consider schools to be the best places for technology-based learning to take place.

Digital technology and the growing rejection of the school

So far this paper has outlined a range of arguments, ideas and proposals relating to school change and digital technology. To date much of the established academic thinking has focused on the 'reschooling' view of adjusting and reconfiguring the main structures and processes of schooling along more 'technology-friendly' lines. For example, there is broad agreement within the academic literature, that the educational potential of digital technology is more likely to be realised through a redefinition of the processes and practices of contemporary schooling. Indeed, the need to develop 'school 2.0' is an increasingly

common topic of educational technology debate, with digital technology positioned as offering "a simple, clean approach" to redesigning schools (Apple, 2008; p. 4). It is now a becoming a fairly orthodox position within educational technology debates to argue that the processes and structures of schools are in need of being updated and rethought in light of digital technology use. However, some of the arguments covered in the last section of this paper hinted at a creeping frustration amongst some educational technologists with the general concept of the school altogether. Indeed some commentators are now openly hinting that they consider schools to be beyond salvation. Why then is there a growing rejection of school-based learning within some sections of the educational technology community?

As we saw earlier on in this paper, powerful arguments are being advanced that children and young people may well be better off learning amongst themselves through the support of digital technologies. In particular, internet technologies have been promoted as providing a ready basis for young people's circumvention of the traditional structures of their schools and generally "finding something online that schools are not providing them" as Henry Jenkins (2004; n.p.) has put it. Digital technologies are seen to be able to move schooling away from being "a special activity that takes place in special places at special times, in which children are instructed in subjects for reasons they little understand" (Leadbeater, 2008a; p. 149). In this respect, a great deal of faith continues to be vested in digital technologies as a catalyst for the total discontinuation of twentieth century forms of schools and schooling.

Indeed, a subtle rejectionist line of thinking can be found in quite a few accounts of educational technology and schools. This can be seen if we think back to the writing of the technologist Seymour Papert – one of the guiding lights of educational technology thinking over the past forty years. It could be argued that Papert has promoted an often overt anti-school agenda throughout all these works. Take, for instance, his contention that schools and schooling are "are relics from an earlier period of knowledge technology" (Papert, 1998; n.p.) or that new technology will "overthrow the accepted structure of school, the idea of curriculum, the segregation of children by age and pretty well everything that the education establishment will defend to the bitter end" (Papert, 1998; n.p.). Perhaps Papert's most memorable proclamation in this respect was …

> "the computer will blow up the school. That is, the school defined as something where there are classes, teachers running exams, people structured in groups by age, following a curriculum - all of that. The whole system is based on a set of structural concepts that are incompatible with the presence of the computer" (Papert, 1984; p. 38).

Such sentiments have implicitly informed the work of many other educational technologists over the last thirty years. More often than not, the rejection of school-based education is presented in a celebratory way that moves education nearer to harnessing the informal learning potential of digital technology. Yet on occasion some educational technologists cannot resist the urge to express their essentially negative view of the school. This sense of terminal incompatibility between technology and school was perhaps best encapsulated in Lewis Perelman's (1992) observation that any attempt to integrate computing into schools "makes about as much sense as integrating the internal combustion engine into the horse". Over twenty years later, polemic of this sort continues to be an accepted part of mainstream thinking about education and technology, with many commentators willing to denounce schools as 'anachronistic' relics of the industrial age that are now rendered obsolete by contemporary digital technology. As Juha Suoranta concludes: "in their current forms it might be that schools not longer belong to the order of

things in the late modern era, and are about to vanish from the map of human affairs" (Suoranta & Vadén, 2010; p. 16).

In the minds of some commentators, then, the seriousness of the 'school problem' has now passed a point of no return and leaves little choice but to argue for the dissolution of the school as it currently exists. Indeed, there would seem to be an implicit willingness within certain elements of the educational technology community to 'give up' on the notion of the industrial-era school. The idea that technology-based learning could replace the idea of school altogether is becoming an increasingly serious proposition. Yet as with all debates about the 'future' of education, it is important that we take time to properly consider and challenge these proposals and assumptions. Suggesting that the concept of formal schooling is abandoned altogether is a substantial proposal, and not to be taken lightly. It is worthwhile to therefore consider the roots of these contemporary arguments for the digital 'deschooling' of society – not least their ideological origins.

In particular parallels should be drawn between current calls for a digitally-driven dismantling of the school and the earlier deschooling arguments of writers such as Paul Goodman (1962), Jonathan Kozel (1968), John Holt (1969), Everett Reimer (1971), Ian Lister (1974) and, most prominently, Ivan Illich (1971). In particular, Ivan Illich was at the forefront of debates towards the end of the 1960s as educationalists began to consider the emergence of what was being described as 'post-industrial' society. In his 1971 book on 'Deschooling Society' Illich challenged the structures, myths and rituals that underpin all of contemporary capitalist society, not least educational institutions such as schools, colleges and universities. Above all, much of the deschooling literature of the 1960s and 1970s resonates with – and often informs - present debates over digital technology and education. This is especially the case in the interest shown by writers such as Illich in re-appropriating technologies (from networks of tape recorders and computers to 'mechanised donkey' vehicles) for providing learning opportunities along 'convivial' rather than 'manipulative' lines - thus reflecting a faith in the notion of placing new technology at the heart of communities as a ready way to give people the opportunity to access a range of educational objects, skill exchanges, peer-matching and 'educators-at-large' (see Illich, 1971).

Reconsidering the ideology of digital deschooling

It is evident that many of the twenty-first century arguments outlined earlier in this paper for the discontinuation of schooling in favour of technological means (un)consciously update the arguments of Ivan Illich. At first glance, Illich's thinking fits well with many of the issues raised throughout current debates over technology and schools. Take, for example, his condemnation of institutionalized learning as inhibiting individual growth due to its emphasis on 'progress' through mass production and consumption. This reading of school and schooling fits well with contemporary discussion of digital technologies and education. As Charles Leadbeater (2008a; p. 44) reasoned, "in 1971 [deschooling] must have sounded mad. In the era of *eBay* and *MySpace* it sounds like self-evident wisdom". As Leadbeater then goes on to admit, 'the self-help' philosophy of his own thinking on social media and education 'is an attempt to realise some of Illich's ideals' (Leadbeater, 2008a; p. 45). Similarly, as Juan Suoranta concludes:

> "Illich's utopia is turning out to be more of a topical scenario for our so-called information age than anyone imagined. Illich's learning web metaphor is in itself interesting. Its represents nicely the current trend that it is as if all the best minds in education are found in the virtual world of the worldwide web" (Suoranta & Vadén, 2010; p. 19).

The linkages between current educational technology thinking and the arguments advanced by writers such as Illich forty years earlier reflect the highly ideological nature of debate over the schools and digital technology. Illich himself was a politically-fluid but essentially anarchistic thinker who in later years argued against the entire notion of 'education' altogether. Indeed, he reasoned that as people have historically always known many things without enforced and compulsory forms of education then current generations therefore would do better to learn outside the aegis of the state altogether. Of course, the intentions of many commentators on education and technology may well be rooted in similar counter-cultural sensibilities – especially amongst more idealistic elements of the computer programming community. Yet one of the key differences between the original deschooling debates of the 1970s and those in the 2010s is the diversity of often conflicting ideological standpoints of those interests that are currently arguing for such change. As such, the people arguing for the digitally-driven deschooling of society in the 2010s are doing so for a variety of reasons and rationales – not all counter-cultural or anarchic in intention.

Many of these ideological agendas relate back to wider efforts to re-configure the provision of education along market-driven, neo-liberal lines. Indeed, the prospect of the digital replacement of the school is being increasingly used to support neo-liberal arguments for the 'end of school' and the realisation of the 'dream of education without the state' (Tooley, 2006). Here digital technology is valorised in decidedly different terms than with Illich – i.e. as an ideal vehicle for the establishment of "a genuine market in education, where there was no state intervention of any kind, in funding, provision or regulation" (Tooley, 2006; p. 26). From this perspective digital technology is celebrated as a means to re-position education around the power of radical individualism, market forces and the rational pursuit of self-interest.

So while the general premise of technology being used to replace the school may be seductive, it should be remembered such arguments are also used to support a number of more 'laissez-faire' arguments for the dismantling of the state and public sector. Of course, we are not suggesting that these neo-liberal arguments should be rejected out of hand any more than Illich's arguments should be agreed with. It may well be that the convenience of digital technology allows the "privilege and convenience" of education to be provided through the power of the market and "without the unsightly mess" of state provision (Dean, 2002). Yet, if these terms are accepted as the basis for the (re)organisation of contemporary education, then it could be argued that a number of important principles of mass schooling in society are weakened – in particular the principles of collective responsibility and empowerment. Indeed, the counter-argument could be made that there are a number of very good reasons to argue for the continuation – rather than dismantling – of the school in the twenty-first century.

Above all, it could be said that digital technologies should not be allowed to overshadow the basic social importance of formal schooling. From a social justice perspective alone, the argument could be advanced that educational technologists (however well-intentioned) have no right to legitimise calls for the alteration or dismantling of the publically provided 'industrial-era' school. It could be argued that, for all their faults, current forms of mass schooling play a significant role in the improvement of life chances for all children and young people. As Michael Young has argued, academic commentators should remain mindful that schools fulfil a societal purpose as a valuable source of 'powerful knowledge' and social mobility for all children and young people - not just the technologically-privileged few (Young & Muller, 2009).

This concept of 'powerful knowledge' provides an important argument for the continuation of school-based education. It refers to specialist knowledge that can lead to powerful outcomes, such as new ways of thinking about the world, new abilities to act in society and so on. Michael Young argues that these kinds of knowledge and learning are varied – from the high status knowledge that leads to qualifications and jobs (for example formal maths, science and English), through to matters of citizenship and even high-status digital technology use (Young, 2007). These are all forms of knowledge that many children and young people cannot acquire easily at home or in the community. Crucially, this is often knowledge that is not accessible through informal education and that can only be transmitted through the school. In the case of these forms of powerful knowledge, it could be argued that the school plays a crucial enabling and supporting role. These are not things that learners can discover or explore for themselves – not least because learners "cannot know what they do not know" (Young & Muller, 2009; p. 7). To appropriate an argument often made for the continued relevance of the teacher/student relationship in education, there may well be a 'time for telling' as well as a 'time for discovering' knowledge (Schwartz and Bransford 1998). In this sense the formal school should still be considered as one of the most appropriate means of providing a place, as well as a time, for 'telling' and instruction.

Towards an agenda for adjustment

All of these discussions and arguments highlight the complex nature of debates over the continuation of schools and schooling in the digital age. As this paper has illustrated, these debates are often ideological in nature and are driven by wider arguments over what education is for and how society should be arranged. As Levinson and Sadovnik (2002; p. 2) observe, "schools are a Pandora's box for visualising a number of conundrums currently facing liberal democratic societies". In particular, while the idea of a digitally-driven displacement of schools may be justified on technical grounds of increasing the efficiency, economy and even conviviality of education, there are a number of other socially-focused arguments for not radically altering schools and schooling. Although it is easy to denounce the many technological frustrations of the 'industrial-era' school, we should be wary of setting a precedent where the interests of technology outweigh all other social, cultural and political concerns. It could be argued that there are actually few compelling reasons to assume that formal schooling is set to lose significance and status in contemporary society. In fact, the continued persistence of a top-down, hierarchal configuration of formal schooling could be seen as testament to what Steven Kerr identified as the "historical flexibility of schools as organisations, and of the strong social pressures that militate for preservation of the existing institutional structure" (Kerr, 1996; p. 7). Whether we like it or not, there is little historical reason to anticipate the imminent institutional decline of the 'industrial-era' school in the near future.

That said, many of the issues raised in this paper would seem to point towards the need for some degree of change in order for educational institutions to make the most of digital technology and, indeed, to get the most from digital technology-using learners. It could well be that these changes can be achieved through relatively modest 'readjustments' to technological practices that do not disrupt existing institutional structures and boundaries. We should be wary of giving-up on the entire notion of the industrial-era school or university as it currently exists. Instead, it may be more productive - and certainly more practical - to set about addressing the 'problem' of formal education and technology in subtler and less disruptive ways than radically altering educational institutions or even

disposing of them altogether. In this sense, we need to think carefully about the future shape and forms of the educational landscape in term of its formal and informal elements.

We can therefore conclude with a number of thoughts on what form these adjustments may take. In particular it could be argued that more attention should be paid from within the educational technology community over the potential for re-appropriating some of the principles developed from within the 'democratic school' movement and the general "need for a more participative approach to school organization" (Deuchar, 2008; p. 23). Within this literature lie a range of ways of realigning and readjusting (rather reconstructing) the 'fit' between schools and technology – what has been referred to elsewhere as encouraging a 'loose use' of digital technology within the formal organisation and structure of the school (see Selwyn, 2010). Philip Woods (2005) writes, for example, of the benefits of developing 'free spaces' and 'independent zones' within the school where students and staff can suspend their usual hierarchical relationships – if only for a brief period – and be allowed to be free, creative agents. Similarly, Michael Fielding (2009) talks of the benefits of engineering spaces for 'restless encounters' within the school day, where students and staff can come to re-assess their relationships with each other. It could well be that similar opportunities exist for a reshaping of digital technology use along more inclusive and more expansive lines of 'democratic experimentalism', where major, long-term change can be achieved within schools through cumulative, piecemeal reforms (see Fielding & Moss, 2010).

In this sense, permitting a 'loose use' of technology in some areas of the school setting could be seen to be a necessary element of the successful formal use of technology in other areas. Thus sustained and ongoing negotiations between young people and adults over what is (and what is not) permissible within the school space could be seen as a vital element of the healthy ongoing development of technology use within the school. If this line of thought is pursued that a number of questions arise over exactly what opportunities for such loose digital technology use exist within the school setting. Can 'breathing spaces' for informalised modes of digital technology use be negotiated without disrupting the wider organisational structures and relationships that constitute the 'school' and 'schooling'? Whilst addressing this challenge fully is beyond the scope of one individual paper, we conclude our discussion by offering some initial thoughts on potential areas for dialogue and change within the social contexts of the school setting:

- Firstly, are the *formalised rules, regulations, structures and sanctions* that currently shape most, if not all, forms of technology engagement within schools – ranging from when and where specific technologies can be used, to the form of online content that can be accessed. The rules, regulations and other structures of control that surround these aspects of technology use would seem to be evident areas for negotiation between all members of the school community, exploring the leeway that exists for rules to be relaxed or even subverted at certain times with impunity. The overall aim here would be to make technology use in schools more of a self-governing process that is acceptable both to students and teachers. In this sense, there may well be value in approximating an 'open source' approach within the school community to the development of technology regulations. Indeed, whereas open source approaches are applied usually to the development of software and content, there is no reason why principles of openness, ongoing scrutiny and refinement by a community of 'users' can not be applied to the development of the rules and regulations shaping in-school uses of technology (see Weber 2004). Efforts should therefore be made to increase opportunities for staff and student intervention and participation in shaping the terms on which technology is used in educational contexts (Hamilton & Feenberg, 2005).

- Attention should also be given to the negotiated loosening of the nature and scope of ***technology-based behaviours that are tolerated within schools***. From this perspective there may well be opportunities to expand the tacit permission for technology-based activities not necessarily associated with the business of schooling, but nevertheless may provide a balance to more formalised pedagogic and administrative uses of technology. These 'other' activities could include technology-based play and entertainment, informal communication and interaction with others, expressive activities and even the practices of simply 'hanging out' and 'messing around' with digital technologies. Whilst not immediately productive, such activities nevertheless constitute an integral element of participating with new media and have been shown to support young people's acquisition of the "basic and technological skills they need to fully participate in contemporary society" (Ito *et al.* 2008, p. 2). Thus increased emphasis should be placed on school communities reconsidering their stance towards the seemingly inconsequential, risky and/or transgressive technology-based activities that are often regulated 'away' at present (Hope, 2007).
- Many of these changes in behaviours will be associated with a readjustment of the ***places, spaces and times where digital technologies may be engaged with*** within the school structure. Whilst some useful debates are already taking place around the longer-term 're-imagining' of the physical spaces and environments of 'schools of the future' (see Mäkitalo-Siegal et al., 2009), here we are more interested in the possibilities for the immediate adjustment 'around the edges' of the current organisation of time and space within schools. In seeking to (re)use the environments that already exist in schools, it would seem appropriate to concentrate on the times and spaces that are connected less directly to the formal bureaucratic concerns of the school. In this spirit, school communities could explore where informal digital technology practices may be encouraged in already 'slack times' of the school day such as lunchtimes, free times before and after school, and in-between lessons. Similar explorations could consider the 'loose spaces' within the physical environment of schools that have no prescribed formal pedagogic function, such as playgrounds, dining halls, atriums and corridors. It may also be that technology use can be encouraged in less obvious 'found spaces' within the school – i.e. spill over, liminal or 'niche' spaces such as stairwells, bicycle sheds and other hidden spaces of the school (Rivlin 2008). In short, negotiations could be held over the propagation of various 'technological public commons' within the wider bounded nature of the school, "where definitions and expectations are less exclusive and more fluid, where there is greater accessibility and freedom of choice for people to purpose a variety of activities" (Franck & Stevens, 2007; p. 3).

Conclusions

Adjusting school settings in any of these ways would depend on significant shifts in the organisational cultures of schools – especially the model of schooling that exists in the UK and North America. It is therefore important to expect any refinements and changes to school technology use to be incremental and gradual (Sørensen et al., 2007). While no public spaces are absolutely free, the school should be seen as a particularly tight institutional setting, "where rules, meanings and physical structure are explicit and relatively fixed" (Franck & Stevens, 2007; p. 26). Thus all of the instances of possible 'looseness' described above should be seen in a dialectic rather than an absolute sense, where loosenings and tightenings of technology use within a school setting will develop continually in relation to

the other. Yet while it would be foolhardy to assume that achieving these increased flexibilities will be easy, it is our contention that shifts in schools' understandings of what is considered acceptable, appropriate and permissible with technology *are* possible.

In mapping out an initial framework for the negotiated adjustment of school technology use, we are certainly not proposing a complete relaxation of the formal aspects of school organisation and provision. Indeed, it should be remembered that the formal provision of schooling provides a valuable certainty, homogeneity and order to technology use, often providing all young people with opportunities to undertake new tasks that they may otherwise not have. Thus whilst calling for increased freedoms from rule-bound conduct, we should remain mindful that "there will never be a total escape from rules and routines" (Misztal, 2000; p. 72). Indeed, it would be unwise to deny the value of formal schooling at the expense of more informal practices. As Young and Muller (2009; p. 7) contend, "as learners cannot actually 'construct' their own learning (because, in Foucault's pithy phrase, they cannot know what they do not know) the role of [schools] cannot be reduced to that of guide and facilitator rather than as a source of strategies and expertise". In this sense we would reiterate the belief that, amidst any changes, schools should retain their valuable authoritative role in educating, informing and directing the activities of children and young people.

With all these caveats in mind, this paper has attempted merely to advance a modest case for exploring ways of loosening up in-school technology use and introducing a degree of informality to digital practice *without* undermining the overall institutionalised social order of the school. Whilst many education technologists may well consider this to be a disappointingly compromised agenda for change, we would contend that the arguments laid out in this paper are certainly more realistic and achievable than the radical discourses of technological reschooling and retooling currently being proposed by others in the field. To reiterate, we are not calling for a complete, unthinking informalisation where school use of technology is allowed to descend into a learner-driven free-for-all. Instead, careful thought now needs to be given as to exactly how the relationships between formality and informality within schools may be adjusted and altered in ways that can shift the frames of in-school technology use without undermining basic institutional structures and interests. Having put forward an initial framework for change, further discussion and debate is now required to advance ways in which such beneficial *loosenings* may be achieved without incurring a *lessening* of students' and teachers' digital technology use.

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