School 2.0: Rethinking the Future of Schools in the Digital Age

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Introduction

Despite all of the talk of technology transforming organizations and institutions, it could be argued that the organizations and institutions that relate to education have displayed less obvious evidence of change over the last few decades than those in other areas of society. 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 chapter, 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 regard 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 organization, the hierarchies of knowledge that constitutes the school curriculum, and the organization of time that constitutes the school time table. All of these structures – although often out-of-sight and rarely talked about – are integral elements of the organization of schools and schooling. Similarly, with regard 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

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more implicit processes of socialization, 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 organization? 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 one is the use of digital technology to represent the structures and processes of school – what is often referred to as "virtual schooling." The second one is the use of digital technology to reconstitute the structures and processes of school – what can be referred to as a digitally driven "reschooling." The last one 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" program. This program was sponsored by $7.4 million 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 programs for children and young people involved in compulsory schooling. Many states support individual "cyber schools" as well as having district level online programs where between 20 and 80% 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 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. 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 Re-Schooling

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 and 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 remodeling 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 De-Schooling

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 2008a, 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 Reconstitution 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 chapter certainly reflect a strongly held belief among some academics and educational technologists that profound and significant changes to the organization 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. 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. The first one is the widely held assumption among some academics and technologists that digital technology offers a better way of "doing education" – what could be referred to as a technological "pull" factor. The second one 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 organizing and providing educational opportunities?

Technology as a Better Means 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 fulfill 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 are 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 centers, 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 and 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 organizing 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's needs and based on learners taking control of managing and accessing knowledge for themselves (Facer and 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 hierarchization 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 and Gross 1969). Many of these critiques centered 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. The 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 intransigence of schools is considerable. For instance, many school buildings have been criticized 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 organizational arrangements and social relations within schools. A perennial concern among 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 centralized 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). 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 chapter 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 realized 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 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 chapter hinted at a creeping frustration among 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 chapter, powerful arguments are being advanced that children and young people may well be better off learning among 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 2008b, 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 40 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, and 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 past 30 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 20 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 no longer belong to the order of things in the late modern era, and are about to vanish from the map of human affairs (Suoranta and 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 toward 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 "mechanized 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 chapter for the discontinuation of schooling in favor of technological means (un)consciously update the arguments of Ivan Illich. At the 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 (2008b, 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 realize some of Illich's ideals" (Leadbeater 2008b, 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. It represents the current trend nicely that it is as if all the best minds in education are found in the virtual world of the worldwide web (Suoranta and Vadén 2010, p. 19).

The linkages between current educational technology thinking and the arguments advanced by writers such as Illich 40 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 among 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 2010s' society 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 realization of the "dream of education without the state" (Tooley 2006). Here digital technology is valorized 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)organization 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 legitimize 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 fulfill 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 and Muller 2009). It could be argued that there are key differences between

gaining knowledge and gaining experience, and that for many children and young people the most powerful forms of specialist knowledge cannot be acquired easily at home or in the community. In the case of these forms of powerful knowledge, it could be argued that the school plays a crucial enabling and supporting role.

Conclusions

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 chapter 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 visualizing 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 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 organizations, 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 chapter would seem to point toward 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 technology-based education in more modest and far less radical terms than are presently being argued for.

In this sense, educational technologists may be best advised to explore ways of "loosening up" in-school technology use and introducing a degree of informality to current digital practices *without* undermining the overall institutionalized social

order of the school. While many education technologists may well consider this to be a disappointingly compromised agenda for change, this may be a more realistic and achievable approach than the radical discourses of technological reschooling and retooling currently being proposed by others in the field. As such, 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.

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