## Making sense of the 'digital generation'

Growing up with digital media

*This article was written for the journal Self and Society in 2013. It provides an overview of some of the broad issues that are at stake in young people's relationships with digital and social media.*

Young people today are often characterized as a 'digital generation' – a group whose identities are being formed in new ways as a result of the impact of new media technologies. For some, this is cause for a gloomy pessimism about the superficiality and lack of authenticity of modern life; while for others, it prompts a celebration of the apparently empowering possibilities of new media. In this article, I challenge the technological determinism of these kinds of assertions, and argue for a more socially, historically and culturally grounded analysis. I discuss some of the broader issues at stake in understanding young people's relationships with digital media, and then present an overview of current debates, organized around ten key themes. I do not seek either to celebrate or to lament: rather, I hope to provide a more cautious and balanced approach, which recognizes the complexity and difficulty – but also the potential opportunities – of growing up in a 'digital world'.

### Talking 'bout those generations

It is frequently claimed that there is a generation gap in people's uses of digital technology, and their attitudes towards it. Young people are defined as a 'digital generation', an 'internet generation' or a 'Playstation' generation. In Japan, they are popularly referred to as the 'thumb generation' (*oya yubi sedai*), in recognition of their skill in manipulating game consoles and mobile phones. Young people, we are told, are 'digital natives', who have grown up with technology and have a natural fluency in using it – as compared with their parents, the 'digital immigrants', who will always be somewhat incompetent and uncomfortable. In some instances, these claims take on the air of science fiction, in fantasies about 'bionic children' or even 'cyborg babies'. The shared idea here is that generations are somehow *defined* by technology: that just as today's adults are apparently a 'television generation', so young people today are 'growing up digital'. In these formulations, technology is seen to possess an overwhelming power: it effectively defines what it means to be a person.

These kinds of claims form part of a wider public debate about children and digital media that is often simplistic and highly polarised. In the case of the internet, for example, the discussion seems to oscillate between moral panic and wild euphoria. On the one hand, the internet is portrayed as a repository for paedophiles and pornography (along with the occasional terrorist). On the other, it is seen to be all about creativity, liberation and empowerment. Similarly, computer games are either a provocation to violence and a form of mindless 'dumbing down'; or they are a wonderful new tool for learning. The public debate about these issues often shifts awkwardly between these two registers, with both sides making alarmist and over-inflated claims that have little basis in evidence.

In my view, there are two significant problems with these kinds of arguments. Firstly, they tend to essentialise, or over-generalise about, childhood: children are seen either as innocent and vulnerable, or as spontaneously competent and wise. These views are a further reflection of the chronic sentimentality that typifies popular views of childhood. Secondly, these arguments tend to see technology as all-powerful: they frequently entail grand claims about how technology is fundamentally transforming the way we think, feel, live, communicate, relate to each other, and so on. In the process, both technology enthusiasts and nay-sayers typically espouse a form of technological determinism – the idea that technology has powerful effects, irrespective of why, how and by whom it is used. Combining these two sets of ideas about childhood and technology makes for a powerful emotional rhetoric, which in turn reflects much broader hopes and fears about social change.

However, if we look beyond these popular debates, there is now a body of academic work that offers more a socially situated, contextualised analysis of technology. This work challenges techno-determinism; but it also challenges 'social determinism' – the idea that technology just confirms existing social trends. This new approach is sometimes called the 'social shaping of technology' approach. For example, there is a strand of research looking at the *domestication* of technology – at how technology is used and appropriated in people's everyday lives, for example in households and families. There are detailed ethnographic studies of the ways in which young people use technology in forming and maintaining relationships, in organising their everyday lives, and in constructing and playing with identities. The key idea here is that technology has 'affordances' – it makes some things possible, but it prevents other things. However, what happens with technology also depends on people's intentions and on the social context – and sometimes technology is used and adapted in unexpected ways. In other words, there is a dynamic relationship between people's uses of technology and their social needs and purposes: technology shapes people, but people also shape technology.

One significant aspect that is often missing from the popular discussion is the *history* of technology. Indeed, much of the research also seems to be preoccupied with chasing the latest innovation. The danger here is that we ignore continuity at the expense of focusing on change. Studies of the impact and use of older technologies – not just television, but also radio and the telephone – help to put the scale and nature of contemporary developments in perspective. In my own research, I have used approaches from Cultural Studies that take account, not just of people's everyday uses of technology but also of the wider economic, social and political forces that shape it. Technology does not appear from nowhere: what it means, how it is used, and the effects that it may have, all depend upon much wider processes of historical and social change. These perspectives help us to move beyond simplistic assertions about the 'power' of technology – and especially the familiar claim that technology fundamentally transforms all of social life.

So is there a technological generation gap? Perhaps predictably, my answer would be: yes and no. We know from the history of technology that change is gradual, even if it might appear revolutionary at the time. New technologies rarely replace old technologies, although they may change the ways in which they are used. Young people today are still reading and listening to the radio, even if they are doing so online; and many new media use the forms and devices and language of 'old' media.

For most people (young and old), technology is not spectacularly creative or empowering, but fairly mundane, and even banal. While older people may in some cases be 'late adopters', this is far from always the case: for example, mobile phones and micro-blogging (services such as Twitter) were taken up by adults - or at least some groups of adults - well before they became popular with young people. And despite the rhetoric about 'digital immigrants', older people are often quick to catch up: the average age of computer gamers is apparently now around 40, while the largest expansion in using social networking sites is among the elderly.

The 'digital generation' argument may also lead to an over-simplification of how young people actually use technology. It can result in a neglect of the diversity of what is happening, and of other differences that may be much more significant than generational ones. As I shall argue below, 'digital divides' - inequalities in uses of technology based on social class - remain very significant. There is also a danger here in assuming that all young people are 'cyberkids', who are spontaneously competent in dealing with technology – whereas a good deal of research suggests that many of them find it just as frustrating and sometimes as boring as many adults do. It would also be false to assume that all young people are fascinated by technology in its own right. This may apply to a minority, but research suggests that most young people (like most adults) are primarily interested in what they can *do* with technology – for instance in relation to interests and hobbies, socialising, and so on – rather than in technology for its own sake.

Having said all this, I do want to argue that technology is playing a part in broader social changes – changes that may be happening anyway, but which are manifested in people's uses of technology, and perhaps encouraged by them. I will not have time to discuss these issues in any detail, although some brief indications will appear in the discussion that follows. Many of the 'big themes' of contemporary social theory – developed in different ways in the work of authors such as Ulrich Beck, Anthony Giddens, Michel Foucault and Nikolas Rose – are highly relevant here. Such authors typically claim that we now live in a 'risk society', characterised by increasing individualisation, mobility and fragmentation; that traditional values and forms of life are losing their relevance and legitimacy; that society is increasingly consumer-oriented and more intensively mediated; and that, as a result, establishing and sustaining a secure and stable identity has become much more complex and difficult. When it comes to young people, it is suggested that the transition to adulthood is now much more uncertain and precarious: 'growing up' has become a more extended and unpredictable process, whose end-point (adulthood) seems significantly less clearly defined and perhaps significantly less desirable.

Arguably, the proliferation of modern technology both contributes to and extends these tendencies. However, the problem is that these ideas are highly generalised, and in some cases quite grandiose. There are questions about how much of this change is superficial, and how much of it represents genuinely significant shifts in social structures and experiences, and in personal identities. Looking at young people's relationships with digital media can provide a useful testing ground for some of these broader arguments; but it is important to avoid becoming over-excited (or indeed unduly depressed) by novel but unrepresentative developments. For the reasons I have suggested, it is also vital to do justice to the complex interplay

between the technological, cultural, social and economic dimensions of this phenomenon.

Accordingly, in the remainder of this article, I want to identify ten key themes in research and debate in this area. This will not be an exhaustive review of the literature – although some existing reviews and key studies are listed at the end of the article – but a very 'broad brush' account. As I have suggested, my aim here is neither to celebrate the wonders of technology nor to bemoan its harmful effects: indeed, in many ways, I want to draw attention to the ambivalent, provisional and largely unresolved nature of many of these issues.

## Convergence

We need to begin with the meaning of 'digital'. Digital recording and storage involves the conversion of different kinds of data – visual images, written text, sounds – to a series of 'zeroes and ones', digits that can be manipulated within computer code. This is often seen to result in a process of *convergence*, whereby previously separate forms of communication and previously distinct media and technologies can be accessed using the same devices. The most striking current example of this is the smartphone, a device that is used for storing, accessing and creating written text, still and moving images, voice communication, music, and so on.

However, convergence is also an economic phenomenon, which has significant cultural implications. If we consider some of the most successful instances of children's culture over the past couple of decades – such as Pokémon or Harry Potter – this process of convergence has become increasingly significant. While it is by no means new (Disney has been doing it since the 1930s), what marketers call 'multimedia synergy' has effectively become the rule. For instance, Pokémon began life as a computer game, but was rapidly spun off into TV cartoons, movies, books and magazines, trading cards, toys, and a whole range of other merchandise, from children's clothing to lunchboxes to food and drink. The 'texts' of Pokémon – the enormously complex and diverse range of stories, themes and characters – could be accessed on almost any platform, in almost any context: at least for children, they became ubiquitous, even compulsory. In this situation, advertising as such is no longer necessary. In a world where everything is branded, traditional advertising becomes almost redundant: everything is advertising everything else, and every medium leads to every other medium.

It is possible to talk about this as a form of 'exploitation' – although this would be to underestimate the precarious nature of marketing to children. 'Crazes' like Pokémon rise and fall in ways that marketers find very hard to predict and control; and the large majority of new products launched in this market fail to return a profit. The complex dynamics of children's peer groups play a key role in determining what is 'cool' and what is not; and yet it is around these commodities that relationships of affiliation and status are increasingly played out. In the process, children also need to develop and apply new cultural skills; and for some, this ability to interpret and create meanings across a range of different communicative forms amounts to a new form of 'literacy' that is increasingly essential to survival in our intensively mediated society.

## Multitasking

As this implies, technological and economic convergence also has implications for users. Across the last two centuries, modernity has involved a continuing proliferation of media, from the telegraph right through to the smartphone. As I have suggested, this does not necessarily entail the displacement of one medium by another: television did not replace radio or the cinema, and the internet has not replaced television. Despite common beliefs, children today do not read books any less than they did in the 1950s – and if we look back a further 50 or 100 years, many fewer of them would have been able to read in the first place. Rather, economic and technological developments have made available an ever-widening repertoire of media choices. What changes in this situation is more to do with context and purpose: our reasons for using a given medium are likely to change as we have a wider range of possibilities available. How and why we choose to listen to the radio, for example, changes once we can access moving images or stream music of our choice online: it changes its purpose, rather than necessarily making it redundant.

However, what has become particularly notable in the current context is the simultaneous (or almost simultaneous) use of a range of media. While this does not only apply to young people, it is particularly apparent in the familiar image of the young person in their bedroom, flicking between multiple windows open on the computer (the web, Facebook, instant messaging), occasionally texting and speaking briefly on their phone, with television and music playing in the background - while also allegedly doing their homework… It is also apparent in what some find the equally worrying image of young people socialising with friends while simultaneously carrying on conversations through text or e-mail on their phones.

According to some commentators, this use of multiple media enables children to develop high-level skills in 'parallel processing' – that is, the ability to manage and filter different channels of communication at the same time. For others, it reflects a terminal distractedness - an inability to focus and concentrate, or at least an unwillingess to give any more than brief attention to any single source. This is reflected in the popular notion of the 'attention economy' - the idea that media producers are now involved in a competitive struggle for attention, and that attention itself has become the most sought-after (and hence the most economically valuable) commodity.

## Individualisation

One consequence of the modern proliferation of media technology is that access has become increasingly individualised. In the home, the days of 'family viewing' (in which the whole family clustered around a single set) or of a single telephone shared between all family members are long gone. Young people in particular increasingly have privatised access to media such as television, the internet and computer games in their bedrooms. With mobile devices, it also becomes increasingly possible for individuals to access media at any time and in any location.

There are some interesting paradoxes here. Research suggests that parents have become increasingly fearful of the dangers of the world outside the home (whether rightly or wrongly); and that this is one significant reason why they seek to provide children with large amounts of media technology in the home. The 'media rich bedroom' is an attempt to make the home an exciting, desirable place, in which children can be safe. Yet at the same time, the individualised provision of technology undermines the potential for parental control and mediation: it becomes harder for parents to know and control what their children are watching, or even to find out who they are speaking to on the telephone. This in turn undermines parental understanding, and creates grounds for anxiety: if you don't know what your children are watching or doing online, you become prey to all sorts of fears, not all of which may be rational or proportionate. In this context, alarmist stories in the popular press about online paedophiles or cyberbullying may contribute to quite unjustified levels of parental anxiety.

Similar paradoxes apply to mobile devices. In general, it is parents who buy mobile phones for their children on the grounds that this will help to keep them safe: children will be able to contact them in an emergency, and parents will be able to keep track of where they are (newer phones come equipped with GPS technology that makes this even more possible). In this instance, technology offers parents an increased potential for surveillance; but it also enables children to evade control, since they can communicate with other people without their parents' knowledge, anywhere and at any time. Researchers in this area have neatly summarised this dilemma by referring to the mobile phone as a 'digital leash' or as a 'digital umbilical cord'. As this implies, technology may potentially change the relations of power between parents and children, but it may do so in ambivalent and unpredictable ways.

## Connection

There is a further paradox here. On the one hand, these technologies are significantly more individualised; but they also keep us much more intensively connected with friends, peers and family. Research on mobile phones and on social networking sites has emphasised the importance of 'perpetual contact' or 'constant presence' – the idea that we are expected to be constantly available, that we can (and should) maintain contact with people even when we are geographically distant from them. There may be some generational differences here. Some research suggests that young people in particular regard it as rude if you don't respond more or less instantly to texts or Facebook messages; there are even stories of young people sleeping with the mobile turned on next to the bed in case they are contacted.

In this world of constant connectedness, the hierarchies and power relationships of the friendship group ('peer pressure') arguably become intensified. Much of the discussion here has tended to focus on the more spectacular risks, as in the phenomena of cyberbullying and 'sexting' (sending or distributing sexually explicit images via the phone). It is certainly arguable whether there is any more bullying online than would have been happening offline, although technology does undoubtedly offer the potential for wider distribution of material. However, less

attention has been paid to the more mundane aspects of this phenomenon: the speed and ease of access afforded by technology may mean that one's place in the peer hierarchy appears more precarious than is the case in face-to-face interactions. Another rather neglected aspect of this phenomenon (to be discussed below) is that these channels of communication (such as social networking sites) are all commercially driven: Facebook exists because it makes money, and it is more effective in this respect if its means of doing so are locked into the dynamics of the peer group.

Here again, there are very different ways of assessing these developments. We could argue that the potential for connection and relationship that is afforded by these technologies is a positive thing – that it dispels the sense of isolation and 'anomie' that some see as characteristic of modern life. On the other hand, we could see this intensification of relationship as leading to all sorts of psychological pressure and abuse; and we could argue that this sense of connection happens at the expense of 'real' face-to-face relationships – that constantly communicating with distant others makes it harder for us to relate to each other in the here and now.

## Identification

This discussion leads on to the central issue of identity formation. I have used the term 'identification' here, rather than 'identity', to imply a process rather than a possession. In line with contemporary theories, I would argue that identity is something we *do*, not something we *are*: it is not fixed, but constantly negotiated, performed and constructed. Media are self-evidently crucial in this respect, although in recent years issues of representation and self-representation have arguably become more acute, and perhaps more confused, than they used to be. In an age of individualisation, there is a much greater emphasis on self-regulation and self-surveillance: we are compelled to watch ourselves and to be watched by others, and social success has come to depend upon forms of self-advertising or self-promotion. In this context, some argue that the boundary between the public and the private has become entirely blurred: there are no longer any private spaces left.

This is evident in many areas of media, not only digital media. We could point to reality TV (*Big Brother*) and to the newer wave of 'constructed reality' documentaries (*Geordie Shore, The Only Way is Essex*); and of course to the inexorable rise of celebrity culture. Here again, there are some intense critical debates about the political and psychological consequences of these phenomena: is reality TV simply a matter of voyeurism and 'class porn', which enables us to feel superior to those who are judged as socially or psychologically dysfunctional; or is it just a harmless way of discussing issues such as honesty, trust and shame? Certainly, the question of what counts as authenticity – or at least a credible performance of authenticity – is crucial here.

These are also overriding issues in the world of online social networking. Many of the everyday pleasures of social networking – not to mention the dilemmas and conflicts – raise significant questions about how people draw the line between the public and private self, about play and authenticity, and about the means that we use to represent and construct identity. Like other social situations, social networking

sites depend upon norms that are constantly negotiated: they provide pre-defined templates within which we create our profiles and represent ourselves; they expect us to follow particular forms of etiquette and social convention; they enable us to construct and to visualise relationships and hierarchies - and in the process, they inevitably invite us to construct the self in particular ways and not in others.

## Trust and credibility

The issue of authenticity – and indeed of truth and falsehood – is also a key concern in terms of how we make judgments about information. Like my academic colleagues, I frequently warn my students about this: for example, I often advise them not to use Wikipedia, or at least to do so very carefully – although I am not always convinced it is any less reliable than some of the print sources they might consult. Even so, while the internet may be an enormously valuable source of information, it is also a medium *par excellence* for self-aggrandizement, rumour and conspiracy theory. Unlike 'old' media, the internet does not have gatekeepers: there are no newspaper editors, publishers or broadcasters, and no journalistic codes of ethics or legal frameworks that can assure that the information that appears is legitimate and truthful.

In the case of Wikipedia and some other online communities, the idea is that the community will police itself – and to its credit, Wikipedia does appear exceptionally rigorous in signalling the reliability (or lack of it) of what it contains. But without gatekeepers, we are left to the vagaries of reputation: we may come to trust people who recommend or vouch for particular sources, but the development of trust is a long-term and often precarious process. In a situation where we may have access to multiple, conflicting sources of information, trust and credibility are more difficult and yet much more important to establish.

Thus, while wider access to information is undoubtedly a gain, it also raises new and difficult questions. How are we to evaluate what we find online? What means do we have available to identify the sources of information, and to assess the motivations of the people who create and distribute it? How do we make sense of the increasing amounts of information that are now available – and how does information become knowledge? As more and more individuals become creators or producers of digital content, and as it becomes increasingly easy for us to assemble and repurpose material from different sources, new ethical issues arise, about intellectual property, the ownership of information and the responsibilities that come with public communication. As this implies, there is an urgent need to develop a critical understanding of how information is produced, and the ways in which it might be evaluated – a kind of 'critical digital literacy'.

## Participation

For its more optimistic advocates, this potential for participation is one of the most significant benefits of digital technology. Some have argued that the internet – and especially 'social media' or 'web 2.0' services – are creating a more democratic, creative 'participatory culture'. It is important to distinguish here between different

dimensions or levels of participation, however. Everyday interaction (for example in the context of social networking sites) is rather different from the more active forms of digital creativity that are generating so much excitement: these would include the sharing of user-generated content (for example in platforms such as YouTube and Flickr), blogging and micro-blogging (such as Twitter), and various forms of civic and political activism.

There is a powerful rhetoric that surrounds these developments, which is replete with optimistic claims about interactivity, empowerment and democracy. It is frequently argued that these more decentralised media will bring about more egalitarian dialogue, and promote a greater diversity of expression, particularly for those who are marginalised or denied access by mainstream media. Some argue that these technologies provide a vibrant alternative to traditional politics, and that they will somehow create a new form of democracy, or at least save the existing one from terminal decline. In addition to bringing 'power to the people', this technology is also seen to stimulate creativity, to offer new opportunities for people to represent their interests and concerns, and thereby to challenge the power of 'Big Media'. For example, enthusiasts point to the burgeoning of fan fiction and fan art, in which fans use the characters and scenarios of their preferred texts to create new – and sometimes subversive – representations.

However, there are several ways in which these arguments can be questioned. Research suggests that the kinds of people who are involved in these more participatory activities are largely confined to the 'usual suspects' – that is, people who are already privileged in other areas of their lives. 'Digital divides' (to be discussed below) are particularly apparent in the different levels of creative participation and civic engagement online. A second criticism would be that a great deal of this kind of activity is effectively a form of unpaid labour: the commercial media industries are very interested in 'user-generated content', not least because it is a means for them to acquire new content without having to pay for it. What might seem to be a form of play is in fact a form of work, not least because the companies that host and display these productions (for example on online sharing sites) often claim ownership of them.

## Commercialisation

This leads on to a further key aspect of young people's relations with digital media: the commercial dimension. All the digital activities that are frequently celebrated as democratic and participatory, such as social networking, online sharing and micro-blogging, take place on commercial platforms that are owned by large multinational corporations. While they appear to be free at the point of use, they function as effective means of targeted advertising, not least because they are able to gather information about users and their online activities through the process known as data-mining. The posting of user-generated content, the tweeting, tagging, linking, commenting and remixing that is apparently so empowering are all simultaneously being used as means of consumer surveillance. While companies such as Facebook and Twitter may have yet to fully realise the means of 'monetizing' this information, there is no doubt that the potential is there.

This phenomenon in turn reflects the growing complexity and reach of the commercial market. Over the past few decades, children and young people have come to be seen as an increasingly lucrative target market. However, as I suggested above, they are also an unpredictable and volatile market; and marketers are having to spend increasing amounts of time and money in their efforts to understand how this market works. This has led to a significant paradigm shift in how marketing is conceived: there has been a move away from old-style 'mass' marketing and 'hard sell' advertising, towards a more personalised, apparently more participatory approach. Digital media are often central to these new marketing strategies. Techniques such as embedded marketing and product placement are much more pervasive, and much harder to identify and to avoid than traditional advertising; while approaches like viral marketing and co-creation attempt to capitalise on the dynamics of young people's friendship groups. Marketers typically claim that these new approaches are all about empowerment rather than passive consumption: they are about companies having 'dialogues' with consumers, and about fostering consumers' 'creativity'.

Of course, young people are by no means passive victims of commercial manipulation. Research shows that quite young children understand the persuasive functions of advertising, and are often highly critical of it – although the extent to which they understand these new, more pervasive and subtle approaches is less clear (although the same might well be argued of adults). Here again, there is a strong argument for a form of 'critical digital literacy' that will enable young people – and all of us – to understand the commercial dimensions of these technologies and services.

## Inequalities

In general, the 'logic' of markets is such that it is bound to accentuate inequalities. This is not to imply that this is a sinister process: rather, it is simply that a market system will inevitably serve the most valuable or lucrative consumers in preference to those who are not so valuable, because this is the most efficient means of generating profit. The key issue with regard to commercialisation, I would argue, is not so much about 'consumerism' or 'materialism' (which are very nebulous and judgmental terms in any case), but about inequality.

'Digital divides' persist both within quite technologically rich societies such as the UK, and on a global scale. In some instances, these divides are still to do with access to equipment: poor children are less likely to grow up in households with high-quality computers and internet access than children from more wealthy backgrounds. Most of the world's children grow up in homes that do not have electricity, let alone broadband internet. However, as I have suggested, these divides are also about the 'cultural capital', the skills or competence or know-how, that is required to use that equipment in creative and productive ways. Again, this is a question of 'literacy' – of critical knowledge and understanding – not just about technology.

These inequalities play out globally, but also on a micro level, within the dynamics of young people's peer groups. Along with other consumer goods, media technologies (the latest mobile phones or MP3 players, for example) function as symbolic markers

of status. Parents may also feel compelled to invest in technology as a symbolic marker of 'good parenting'. These technologies give children access to information and cultural goods, and provide opportunities for participation, that are not equally available. As a result, some children may be 'in the know' – both in terms of educationally valued knowledge, and in terms of informal knowledge that is valued within the peer group – while others are not. This has significant implications in terms of how schools and other educational institutions engage with technology.

## Learning

The discussion of digital technology and learning is often suffused with the rhetoric of liberation and empowerment that I have identified in other areas here. Advocates of 'technology-enhanced learning' typically claim that technology will bring about new styles of informal or creative learning; that it will enable children to learn from each other and to take charge of their own learning; and that it will motivate and engage them in ways that teachers are no longer able to do. Thus, using whiteboards or learning platforms, or even computer games or social networking, is believed to automatically enthuse learners and raise their achievement. Some more visionary commentators go so far as to argue that traditional teaching is outmoded, that the school as an institution is dead, and that technology will shortly come to replace them. In essence, this is an example of techno-determinism applied to learning and education; and like other kinds of techno-determinism, it dramatically oversimplifies a complex process.

Where do these proposals lead? One dominant approach is sometimes called 'edu-tainment'. The implication here is that if we combine education and entertainment, if we dress up boring content with exciting new technological gimmicks, it will automatically become interesting and motivating. There is a long history of research – dating back well before the advent of digital technology – which shows that this approach does not work. Technology in itself might have a temporary effect, but children quickly see through it and the effect disappears. As for the suggestion that learning with technology is inherently more creative or student-centred, one need only look at the realities of how digital technologies are actually used in classrooms. The preponderance of mechanical 'drill and skill' packages is itself largely driven by the commercial imperatives of the companies that produce them, although it also coincides with the 'back to basics' approach of much government policy.

Here again, my argument implies the need for a kind of 'digital literacy'. However, this would need to go well beyond mechanical training in the operation of technology – an approach that tends to dominate education about technology in schools (in the UK, within the compulsory school subject of ICT). This is an approach that most students find boring and largely irrelevant to their needs – and indeed completely out of step with what most of them are doing with technology outside school. In my view, education in 'digital literacy' would be fundamentally concerned with critical understanding, and indeed with exploring some of the critical questions about technology that I have been raising here.

## Conclusion

The questions and debates I have briefly outlined in this article are by no means resolved. The evidence from research is growing, but it remains limited; and it is obviously difficult for research to keep pace with technological change. Although I suspect that most readers of this journal will find reason to dispute some of my arguments, I hope I have illustrated the need for a balanced and even-handed approach – not least because the consequences of many of these developments are so complex and ambivalent. I have also tried to indicate that the question of children's relationship with digital technologies is not simply a psychological issue, a matter of 'mind and screen', but one that needs to be understood in the context of broader social, economic, political and cultural forces. This approach gets us beyond the limitations both of technological determinism and of some of the sentimental views of childhood that so often inform the debate. It should also help us to arrive at a more considered view of the place of media and technology in the relation between self and society.

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