# Young people are spending their time in a space which adults find difficult to supervise or understand …


## Their Space

Education for a digital generation

Hannah Green
Celia Hannon

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As always, all errors and omissions remain our own.

Hannah Green
Celia Hannon
January 2007

# About this report

There are some powerful myths that inform the way people think about youth culture. This report sets out to challenge some of those myths, in order to explore the real value behind the digital interactions that are part of everyday life.

The genesis of this project was Steven Johnson's book launch at Demos for *Everything Bad is Good for You*. Johnson argues that over the past 50 years popular culture has become more complex and more intellectually challenging.[1] Alongside Demos's ongoing work and interest in creative production and learning this raised a set of important questions around young peoples' use of digital technologies – what and how are they learning and is a new digital divide in terms of networks of knowledge rather than access to hardware emerging? Our partner, the National College for School Leadership, wanted to look for strategies that would equip school leaders to understand what young people are learning outside the classroom and how schools can build on it.

This report is the result of nine months of work that focused specifically on understanding how children and young people use new technologies. We carried out an initial stage of background research, drawing on existing academic literature, demographic data and policy documents. The methodology, approach and research questions were tested at a Demos seminar in May 2005 which brought together senior policy-makers, academics, headteachers and

commentators. The seminar and a series of expert interviews which followed allowed us to test our hypothesis – that schools need to respond to the way young people are learning outside the classroom. It also provided invaluable feedback and suggestions for further research.

Over the next six months we undertook interviews, group discussions and informal conversations with children and young people around the UK. We asked interviewees to fill in diaries tracking their media consumption – what they used, what they used it for and how often they used it. These diaries were a starting point for a series of focus groups. We spent time in primary and secondary schools and youth groups with over 60 children and young people aged between seven and 18, speaking to them about how new technologies fitted into their lives.

Finally, we also polled 600 parents of children aged four to 16 across England to find out their views on learning and the role of digital technologies in their children's lives. Polling was not designed to be representative in a quantitative sense, but to enable us to view digital technologies from the perspective of parents as well as children.

## Research findings

The baseline finding from our research was that the use of digital technology has been completely normalised by this generation, and it is now fully integrated into their daily lives. The majority of young people simply use new media as tools to make their lives easier, strengthening their existing friendship networks rather than widening them. Almost all are now also involved in creative production, from uploading and editing photos to building and maintaining websites. However, we discovered a gap between a smaller group of digital pioneers engaged in groundbreaking activities and the majority of children who rarely strayed into this category. Meanwhile, contrary to society's assumptions about safety, this generation is also capable of self-regulation when kept well informed about levels of risk. Finally, many children we interviewed

had their own hierarchy of digital activities when it came to assessing the potential for learning. In contrast to their teachers and parents they were very conscious that some activities were more worthwhile than others.

All these young people have something in common – they all use technology in a way that in the past would have labelled them 'geeks'. But they are not all using it in the same way. Our research has pointed to a number of different user 'types', which we use throughout the report:

- *Digital pioneers* were blogging before the phrase had been coined
- *Creative producers* are building websites, posting movies, photos and music to share with friends, family and beyond
- *Everyday communicators* are making their lives easier through texting and MSN
- *Information gatherers* are Google and Wikipedia addicts, 'cutting and pasting' as a way of life.

Characterising children in this way is not about identifying good ways or bad ways of using technologies. Nor is it about fixing them into certain types – many of the young people we spoke to moved through a number of these types and combined them in different ways. Instead, it is a way of describing life with digital technology from the perspective of children.

# Handbook for the digital age

## A glossary of terms

**Bebo** is another popular social networking site often for younger users with over 22 million registered members. It is estimated that about five people register every second (although a much smaller number of members are regularly active on the website).[2]

**Blog** is a website that often takes the form of an online personal diary. The word 'blog' is derived from web log and blogging subjects are as varied as human interests.

**Del.icio.us** is a social bookmarking website. It enables individuals to save their favourite articles, blogs, music and reviews; share them with friends, family, coworkers and the del.icio.us community; and browse other people's favourites.

**Facebook** is a social networking site that uses corporate email addresses, particularly university emails, to verify users as members of already existing social networks and then becomes an online extension of that network.

**Flickr** is a photo-sharing website. Not only an online photo album, its focus on the art of photography encourages and supports the growth of social networks through common creative interests.

**GoogleVideo** is similar to YouTube. It allows users to upload their own content, provides access to stock content and a marketplace for music videos, TV episodes and trailers.

**iMovie** is a piece of software designed to make editing and

producing professional-looking videos intuitive and quick in order to reduce obstacles to home video creation.

**IRC** or Internet Relay Chat is a communication tool similar to MSN in that it allows the instant exchange of text messages. However, unlike MSN it allows strangers from all over the world to meet online and to communicate.

**iTunes** is music library management software that allows users to import music from CDs, organise it into playlists, play music, purchase it from an online store and load it on to their iPod.

**MSN** is one of a range of services that allow text messages to be sent from one computer to another instantly so that a conversation can be carried out over the internet.

**MySpace** is a fast-growing social networking site with over 100 million registered members globally. It offers an interactive, user-submitted network of friends, personal profiles, blogs, photos, music and videos.

**Online international multiplayer games** take place in a computer-generated imaginary world. Players guide their custom-designed character through a virtual life. They are open-ended games that provide players with almost limitless possibilities. Popular examples include World of Warcraft and Secondlife.

**Piczo** is another social networking and blog site distinguished by its 'walled garden' approach protecting user privacy by not providing search facilities for users.

**Podcasts** are audio or video recordings that are downloaded automatically by software on subscriber's computers every time a new edition is posted on a website. Easy to produce and distribute, the consumer can, and often does, turn creator.

**Social networking** refers to the aspect of Web 2.0 that allows users to create links between their online presence such as a webpage or a collection of photos. These links may be through joining online groups or by assigning direct links to other users through lists of 'friends' or contacts.

**Web 2.0** refers to a 'second generation' of internet-based services that emphasise online collaboration and sharing among users, often

allowing users to build connections between themselves and others.

**Wikis** are websites where content can be edited by any visitor to the site. An example of a wiki is **Wikipedia** – an online encyclopaedia providing free content to all visitors and to which any visitor can add their own information or make corrections simply by clicking the *edit this page* link.

**Xbox and Nintendos** are a cross between a VCR and a computer. These are machines whose primary, and until recently only, purpose was to run games. Either plugging into a television or existing as portable handheld units these were often the first computers to enter the family home.

**YouTube** allows people to post their own videos for others to watch, to give their opinions on the content that is there, and to make links between videos. YouTube has grown into an entertainment destination with people watching more than 70 million videos on the site daily.

# Executive summary

## School's out

The current generation of decision-makers – from politicians to teachers – see the world from a very different perspective to the generation of young people who do not remember life without the instant answers of the internet or the immediate communication of mobile phones. It is these decision-makers who shape the way that digital technologies are used in the system and who set them up to limit their use and role in everyday life. This is a short-term solution to a long-term change. In an economy driven by knowledge rather than manufacturing, employers are already valuing very different skills, such as creativity, communication, presentation skills and team-building. Schools are at the front line of this change and need to think about how they can prepare young people for the future workplace. But it is not just about schools – parents, young people and society in general have a blind spot in terms of recognising and valuing these 'softer' skills.

## Myths and misconceptions

When they first emerge almost all new technologies have provoked panic over their potential impact. Debates driven by moral panic on the one side and technological determinism on the other are in stark contrast to the way young people view and use technologies. The

young people we spoke to did not find questions around their consumption of digital technologies interesting. Using them was completely ingrained in their lives, and they did so simply to make their lives easier. They were preoccupied with maintaining existing networks, searching for homework on Google and playing games. Chapter 2 examines several myths to identify elements of truth alongside the distortions. We draw on our conversations with individual children, diaries, focus groups in formal and informal educational settings and our polling of 600 parents. This chapter builds up a clearer picture of the use, role and impact of digital technologies on young peoples' lives.

## Learning from digital pioneers

Most young people use technology to facilitate the kind of social interactions that we all recognise. However, there is a smaller group of digital pioneers that is pushing at the boundaries of conventional practice. For every focus group we ran there was a 'leader of the pack' who was one step ahead of the other children. These individuals have strong digital identities and are making the shift from consumption to creation. A range of characteristics is common to this type of activity – self-motivation, ownership, purposeful creativity and peer-to-peer learning. Chapter 3 examines these characteristics in more detail and explores examples of schools that are building on this type of learning. These schools and headteachers are transferring elements into the classroom without assessing or institutionalising informal learning.

## Start with people not PCs

In order to see change across the system, there needs to be a shift in thinking about investment from hardware towards relationships and networks. In the last ten years we have seen a staggering change in the amount of hardware in schools, but it has not had a significant impact on teaching and learning styles. So what does this mean for schools? It means that they need to really listen and respond to their users. Schools often fail to start in the right place – with the interests

and enthusiasms of their students. They also need to recognise the new digital divide – one of access to knowledge rather than hardware – and start to redress some of the existing imbalances. Finally they need to develop strategies to bridge formal and informal learning, home and school. They should find ways that go with the grain of what young people are doing, in order to foster new skills and build on what we know works.

## The world has changed so why haven't we?

The current generation of young people will reinvent the workplace, and the society they live in. They will do it along the progressive lines that are built into the technology they use everyday – of networks, collaboration, co-production and participation. The change in behaviour has already happened. We have to get used to it, accept that the flow of knowledge moves both ways and do our best to make sure that no one is left behind. Chapter 4 talks about a necessary shift in values to make this happen. Chapter 5 goes on to outline the practical changes that need to happen at every level in the system from policy-makers to practitioners in order to see real transformation.

# 1. School's out

## New digital horizons

It's the summer holidays in south London. In a community centre in Herne Hill 20 kids are crammed into a room of computers. The children range in age from seven to 19 and some are sitting two to a computer – they're slightly bemused by our questions. Why would anyone want to ask about computers and mobile phones? Aren't they just part of everyday life? The children are all busily using the computers with their friends, swapping their favourite websites and online games. These activities would not be classed as 'cutting edge' – while some children are creating their own webpages most are just chatting with friends on MSN. Some are downloading pictures and teaching their friends how to edit them, and two or three have got together to design a newsletter for the centre. Most have computers at home but this youth group offers a space for these activities to take place alongside each other. For this group of young people technology is fully embedded in their everyday activities.

While technology is not dominating or transforming the lives of anybody in this group, it is a strong enough incentive to get them inside an uninspiring-looking room on a hot day in August. Seven-year-old Juliet explained that she came because 'I like drawing on the computer, well, I like it the same as drawing with pencils'. Most saw digital technology as another 'tool' to make their lives easier. Chris wears a dark blue Nirvana hoodie. His curly red hair covers his eyes. 'Have you ever read a manual?' we ask. He smiles. 'We haven't even

seen a manual', he says. Do you find out how to do things online? 'No, not really. Mostly we learn from the older people in the group.' They don't seem to need much teaching. Once they have the confidence they can master the basics on programs like iMovie completely intuitively.

These children are not the class nerds – knowing your way around a computer no longer detracts from your popularity. Quite the opposite; everyday use of sites like MySpace and services like MSN are all part of having a healthy social life.

## Digitalives

Teenagers today can do things that teenagers ten years ago could not have imagined. As software and hardware have simultaneously become cheaper, more sophisticated and easier to use, this generation is burning self-shot home movies, composing and recording music and editing photos. There is nothing new about young people being creative and expressive – you certainly do not need a computer to decorate your bedroom, form a band or decide which clothes to wear. The difference is that by digitising their creative efforts this generation of young people can share the fruits of their labour with a worldwide audience. They can post videos on YouTube or GoogleVideo, upload photos to Flickr and link back to their friends on MySpace, FaceBook or Bebo. They are connecting, exchanging and creating in new ways.

This generation will not be the first to change society; like the baby boomers and the Generation X-ers did before them they will have a profound impact on the world around them. While we have spent considerable time and resources looking at reasons for feeling anxious about this impact, we have only just begun to explore how a digitally literate tribe of young people learn and communicate. Their use of technology – from the unremarkable to the unrecognisable – has far-reaching implications for schools, universities, the workplace and society more broadly. Born in the 1990s this group of children is the first who cannot remember when they first used a computer. In this report we explore what the varied digital experiences of these citizens means for the way they live.

## Attitudes to technology: moral panic versus digital faith

There are two broad responses to this digital shift. The first is characterised by media narratives around toxic childhood, violence, videogames and an apathetic generation of young people. It is a reactionary response which focuses on the potential dangers of new technologies. The second is characterised by a technological determinism that hails all new technology as positive and potentially transformational. These are of course caricatures of a much more complex and sophisticated debate.[3] However, there is little doubt that these polarised views dominate public discourse, and they cloud our understanding of the impact of new technologies on peoples' lives.

It is difficult to get beyond this stagnated debate. We live in an intellectual climate where most people over school age are uncomfortable with the growing presence of digital technologies. These decision-makers – from politicians to teachers – see the world from a very different perspective to children who do not remember life without the instant answers of the internet or the immediate communication of mobile phones. They are too often inclined to view the sweeping success of social networking sites, mobiles and gaming as a destabilising weapon in the armoury of youth culture.

This lack of alignment between the digital reality of young people's lives and the institutions they come into contact with is true of society at large. The press responds with incredulity when politicians demonstrate their grasp of MySpace or iPods, while the Sunday supplements regularly report on the 'digital generation', claiming their lives are almost unrecognisable.[4] Yet the idea that institutions such as schools should change to respond to these developments seems remote.

So there is a 'disconnect' between the people who make the decisions and those who are experiencing the results in schools. This is important not just because we are at risk of alienating a generation of young people; its potential consequences are much more long term. As we move from a manufacturing to a knowledge-based

economy the skills that young people need are changing. If we fail to meet the challenges this poses then we will fail to prepare the next generation for entering the future workforce.

## It's the knowledge economy, stupid

We cannot afford to make the mistake of trying to prepare children for today's jobs. We know that as the knowledge economy continues to expand and more traditional sectors decline, the creative and cultural sector will rise to take their place. Alongside global trends this will impact directly on the job market of the future.

In the UK the creative and cultural sector currently provides jobs for over two million people and accounts for more than 8 per cent of our GDP and more than 4 per cent of our export income. Overall it contributes £11.4 billion to the UK balance of trade and KPMG estimates growth in employment in the creative industries of 46 per cent.[5] The Chancellor has pinned his hopes for the continued growth of the UK economy on their success. In a recent speech to the Smith Institute he estimated that: 'In 2020 our biggest exports will be health, education and the creative industries. In the global age we cannot afford to waste the talent of one single individual.'[6] James Purnell, former Minister for the Creative Industries, is as enthusiastic:

> *Look at the way the creative industries have helped to transform Manchester, Gateshead and Glasgow. Over the last decade, your sectors have grown twice as fast as the overall economy . . . accounting for a twelfth of our economy, more than in any other country.*[7]

And this is happening at a global as well as national level – the UN reports that the creative industries already account for more than 7 per cent of global GDP and is expected to reach 11 per cent by 2015.[8]

Countries are no longer discrete entities with investment, production and innovation confined to national borders. Companies in Europe, the US and Japan can produce microchips in Singapore, keypunch data in India, outsource clerical work to Ireland and sell

worldwide. Children in school or watching TV are connecting to a globalised world through music, the environment, sports and race or ethnicity in a way that their parents never did.[9] From the 1950s onwards jobs in the UK have shifted from production of agricultural and manufactured goods to the production of increasingly sophisticated services and gathering of information. The main ingredient in these services is now knowledge. This shift means that we are beginning to re-evaluate the kinds of skills and competencies that people, organisations and institutions need to thrive and flourish.

The very point of the knowledge economy is that it is shaped, reinvented and driven by people who are part of it – it will look very different in ten years' time. Rather than thinking about specific areas of knowledge, we need to start to focus on the kinds of skills that enable people to thrive in a changing environment and come to terms with and adapt to change in creative ways.

This is not a question for the future: many employers are already demanding these 'soft' skills. Literacy and numeracy are still seen as core requirements, but employers are increasingly asking for proof of a range of skills from creativity, ideas generation and presentation, to leadership, team-building and self-confidence. In fact a recent poll of human resources directors showed that employers demand communication skills and think creativity is vital for the future. Importantly for today's pupils, they rated creativity and innovation as the most important graduate skills in ten years' time. As Gillinson and O'Leary conclude, 'increasingly employees need initiative as well as intelligence, creativity as well as qualifications'.[10]

This is borne out in research conducted for a recent *Financial Times* article[11] in which Sandra Gisin, who oversees knowledge and information management at the reinsurance giant Swiss Re, says that although colleagues marvel at the speed at which younger workers communicate and gather information, they also have a tendency to uncritically accept the top results from a Google search. Sandra explained that Swiss Re will be training workers in how to evaluate, question and prioritise information.

Dow Jones news organisations have similar concerns. They have created programmes for journalism educators and reporters-in-training to drive home the point that journalists should not rely on a web source without checking its origin and confirming the information in other ways. 'We drive home the point that it's not good enough to say "I read it on the internet" without taking other steps to verify it,' notes Clare Hart, president of Dow Jones Enterprises.[12]

If the knowledge economy is driven by the people within it, then the skills that employers want is only half of the picture. The other half involves the new skills that young people are learning. Leading-edge 'techy' organisations are tapping into the skills developed by a generation that has grown up with Nintendos, Xboxes and more recently online multiplayer games. Unlike the learning acquired through textbooks, lectures and classrooms, the learning that takes place through these multiplayer online games is referred to as 'accidental' learning or learning through doing.[13] To be an effective World of Warcraft guildmaster one needs to be adept at many skills: attracting, evaluating and recruiting new members; creating apprenticeship programmes; orchestrating group strategy; and managing disputes. All of these skills are readily welcomed in the modern workplace, and they are set to become even more valuable.

## Pulling the plug: schools' response

None of these skills, or the other 'soft skills' mentioned above, are explicitly taught in schools. In fact the idea that they can be taught in any traditional sense with a teacher standing at the front of a classroom is disputable. A raft of new subjects such as citizenship and enterprise education have found their way onto the curriculum and are specifically aimed at addressing this skills gap. Work experience is now a statutory part of the Key Stage 4 entitlement. The aim of these new subjects is to foster innovation, creativity and the drive to make things happen.[14] Yet as Gillinson and O'Leary have pointed out, such an approach suffers from a fundamental problem: it equates the acquisition of skills with specific subjects, and in doing so fails to

penetrate vast swathes of the curriculum and compounds the false distinction between knowledge and skills.[15]

It is not possible to grow the creative industries unless there's a growth in the acquisition of the right kind of skills. But the answer does not lie in schools starting to try to teach these in specially designated subjects. It is much more complex than that. These are the kinds of skills that young people are developing outside the classroom in project work, field trips, sport and music. Often they are being developed outside school altogether and they are increasingly being facilitated by digital technologies. The debate around the role and importance of informal learning has taken up commentators' energies for years. In his 1971 paper 'Education without school: how it can be done', Ivan Illich questioned the dominance of formal education by arguing that most people value the knowledge and values that they have learned outside school more highly than any information or skills they gathered in the classroom:

> *Their knowledge of facts, their understanding of life and work came from friendship or love, while viewing TV, or while reading, from the example of peers or the challenge of a street encounter.*[16]

Rather than harnessing the technologies that are already fully integrated into young peoples' daily lives, schools primarily have a 'battening down the hatches' approach. Responding to concerns about the safety of social networking sites, most schools block MySpace, YouTube and Bebo. Mobiles, iPods and other pieces of equipment are similarly unwelcome in the classroom. Meanwhile, teachers often do not feel confident using hardware or software – many know less than their students. Unless they follow their own enthusiasm, they are unlikely to have the skills – teacher training requires only basic competency in email, Word and Excel.

This government has initiated an unprecedented investment in school hardware. Secondary schools now spend £91 per pupil per year on information and communication technology (ICT), and the

government has promised another £1.7 billion by 2008.[17] But without an ambitious understanding of how these tools can aid sophisticated learners much of this equipment has gone unused. ICT in schools is predicated on the 'top-down' understanding that we know how children should be learning from technology rather than seeking to learn from their existing practices.

The change needed in schools is twofold. First they need to find ways to recognise and value the learning that goes on outside the classroom. Second they need to support this learning by providing a space to reflect on it, galvanise and develop it so students can recognise and transfer those skills in new situations and contexts.

This is a real challenge for the education system as it stands. Through necessity it is output- and assessment-focused. Teachers do not have the time or the incentives to help students develop their abilities in ways that are not specified in the curriculum. The focus on exam results, whether on a direct or value-added basis, as a way of measuring both school and individual teacher performance, means that other skills and competencies fall by the wayside.

This focus on the assessment system has driven a period of unparalleled success and achievement in schools: the number of students achieving level 5 at Key Stage 2 SATS has grown from 14 per cent in 1995 to 37 per cent by 2006 and there has been a 47 per cent increase in the numbers achieving level 4, rising from 55 per cent to 81 per cent. The number of students achieving five A*–C grades (including English and Maths) at GCSE has also increased, from 35.2 per cent in 1996 to 44.9 per cent in 2005.[18]

This is about recognising and adding value in another way. The goal of any education system should be to create active, skilled and independent learners. Teachers go into the profession with a strong commitment to giving their students the best possible start in life, and our understanding of how to achieve that goal is changing. Rather than thinking about what new resources could be added in order to bring about improvements we need to think in terms of the existing untapped resources that could be released. What strategies are needed to unleash these underused resources? Instead of pumping

more investment into the system, we need to capitalise on the existing resources. And these existing resources are the students themselves.

A great deal of research has been done around defining learning experiences. While there are many specific definitions, most include four key components: finding information and knowledge, doing something with it, sharing it with an audience and reflecting on it. Simply, this could be reading a book, writing down an answer to a question about it, sharing it with a teacher and talking about it. At a more sophisticated level it could be researching a book, writing it, publishing it and then reading the responses from the critics. Information technologies have massively widened the scope for young people to undertake these processes on their own. The audience has changed dramatically too. With the advent of blogging and tools such as Wikipedia, young people are just as likely to seek feedback from their peers and strangers as they are from teachers and parents. This has led to the blurring of the boundaries between expert and amateur, friend and mentor. Sonia Livingstone characterises it in terms of a broader societal shift: 'a blurring of key boundaries between producers and consumers, work and leisure, entertainment and information'.[19]

In the same way that we should see young people as active and valuable participants in designing their own learning experiences, we should also see them as critical participants rather than passive consumers of media.

***Policy imperative***

This shift in understanding is crucial at a time when debates about the future of education, and public services more broadly, are dominated by the idea of personalisation and user-centred services. The idea that students should play an active role in determining their learning experience is central to this agenda.

Understanding what drives and motivates young people is also critical given the unprecedented commitment to the renewal of our school building stock: capital investment is set to reach

£5.1 billion by 2006, and over the next ten to 15 years every secondary school in the country will have been 'transformed'.[20] In 2005 this commitment was extended to primary schools. Nevertheless, the level of investment so far in school buildings has not led to consistently fresh interpretations of what schools could look like. Most new buildings, modernisations and new blocks still comprise a fairly traditional 'boxes and corridors' model of education, determined by classrooms, in which the teacher's station is at the front, storage and computers go round the sides of the rooms and desks are arranged in rows or banks.[21] Over the last ten years schools have also seen a massive investment in hardware, but we have not seen the same level of investment in teacher training to ensure that the hardware is being used to its full potential, or in support for schools to really re-imagine the way that learning is organised.

Finally this shift in understanding is important at a time when mobile digital devices are becoming far more sophisticated and more widely available. Through this we will see the tangible divide between formal and informal learning becoming increasingly blurred. The range of hardware and software available is changing very quickly. Schools need to be aware of the options and understand how to build on them and make the most of them.

These changes offer real opportunities for school leaders to envision the future of learning in ways that build on the life styles of young people.

Although schools are at the front line of these changes, our slow response to this social and cultural shift is not down to schools alone. The failure to recognise and value the skills that young people are developing outside the formal education system is also a blind spot for parents and young people. This is clear from the Demos polling mentioned earlier in the chapter where young people ranked creativity as only the eighth most important skill for the future.[22]

This report aims to explore and offer mechanisms to strengthen

the relationships that could bridge the gaps between what pupils are learning in school and what they are learning out of school, and between the skills they are acquiring and those that they will need. But these gaps can be bridged only if there is a deeper understanding between generations and how they respond to each other. We argue that the answer does not lie in absorbing informal learning into the formal school environment, but in isolating positive elements of informal learning and creating spaces and places to build on these in more formal settings.

Chapter 2 goes on to explore the public perceptions of young people and new technologies by debunking some of the most common myths that currently stifle this debate. They dictate popular perceptions about the way young people behave and the contribution they make to society. Chapter 3 tells some positive stories of digital pioneers and their achievements outside school. Working from the principles that make their learning successful we also see how schools are taking innovative steps to bridge the gap between formal and informal learning. Chapter 4 suggests ways for all schools to better align themselves to the needs and interests of their students, moving the debate from hardware to relationships. Building on the evidence in this report, chapter 5 makes a series of recommendations for the government, school leaders and teachers that would lead to practical changes in schools, to enable them to make the most effective use of the resources within the system, and prepare students for the future workplace.

# 2. Myths and misconceptions

## The way we live now

Open a British newspaper on almost any day of the week and you will find a story about children and the internet. These stories leave parents and teachers feeling concerned, and it makes them far more likely to think twice about leaving teenagers alone with an internet connection. In 2006 headlines were 'Friendship websites expose children to porn and bullying' or 'Cheating students put homework to tender on internet'. These media narratives currently obscure anything of value in children's digital culture. We know that these risks are real and that some children have negative experiences online, but we also need to recognise that this is not every child's experience. At the other extreme to this, and usually in the specialist rather than the mainstream media, gaming and e-learning enthusiasts argue that technology is poised to revolutionise how we learn, even how we live.

Broadly speaking these exaggerated perceptions can be classed as *moral panic* or *digital faith*. Clearly these are caricatures of a more sophisticated debate, and most people would locate themselves somewhere on the spectrum between these polarised viewpoints. However, we need to start by trying to understand children's everyday digital lives and work towards a balanced appraisal of the risks and the benefits of new media. In this chapter we will examine several myths more closely to identify elements of truth alongside the distortions. Based on our conversations with individual children, focus groups, diaries and polling of parents, this chapter builds up a picture of the way children really live now.

***What do parents think?***[23]

We know that informal learning is often organised around the home; in the course of our research we asked children about the role played by their family when learning with technology, and we also asked parents for their views. We polled 600 parents of children aged from four to 16 from different social, ethnic and regional backgrounds. The results demonstrate that parents are witnessing first hand the cultural shift we identify in this report. Yet parents are not always in touch with this shift – 16 per cent of parents admitted to 'never' or 'only occasionally' knowing what their child was doing with phones, on the web or when playing computer games.

**Children's learning**

We asked parents to rank seven ways of learning in order of importance for their child. Only half of all parents selected 'classroom lessons' as their first choice, challenging the commonly held assumption that parents always look to school as the centre of their child's education. Surprisingly, 4 per cent of parents chose either 'surfing the internet' or 'playing computer games' as the first or second most important way their child learns. As ever, parents emphasised social experiences with 20 per cent prioritising either 'sharing a meal' or 'playing with friends' as their first choice.

Two-thirds of parents were certain that their child was 'building their general knowledge' through their use of technology. Fathers tended to be slightly more positive about the impact of technology with 47 per cent of men believing their child was developing their creativity compared with 40 per cent of women. Younger parents tended to identify the emergence of less formal skills such as 'collaboration' while older parents were more inclined to pinpoint traditional competencies such as 'general computer skills'. Broadly speaking parents from social classes AB and C1 tended to believe that their child was deriving greater benefits from digital technologies than parents in the C2 and DE brackets.

**What next?**

What makes these results meaningful for the schools? We asked parents whether or not schools should respond. Just under half of parents agreed that schools should be 'showcasing creative work produced outside of school', while another 47 per cent thought they should offer 'project-based homework presented through any media'. Nevertheless, they were not keen on informal learning being completely subsumed into the formal system, with only 19 per cent approving of a 'GCSE in computer games'.

## The myths

### Moral panic

1 The internet is too dangerous for children.
2 Junk culture is poisoning young people and taking over their lives.
3 No learning happens and digital technologies are a waste of time.
4 There is an epidemic of internet plagiarism in schools.
5 Young people are disengaged and disconnected.
6 We're seeing the rise of a generation of passive consumers.

### Digital faith

7 All gaming is good.
8 All children are cyberkids.

## Myth 1: The internet is too dangerous for children

*MSN is good because you can't have random strangers talking to you, you only talk to people you know. One time someone I didn't know added me to their list but as soon as I realised I just blocked them.*

Girl, aged 15

Children are spending their leisure time in a space which adults find difficult to supervise or understand. As a result, safety inevitably

dominates the headlines in discussions about children and technology. There are many reasons to take the issue seriously; there is a profound lack of parental confidence when it comes to 'controlling' their children's use of technology. Furthermore, our polling indicated that 16 per cent of parents admitted that they never or only occasionally know what their child is doing with mobiles and PCs.[24] Many parents and school leaders feel that internet filters are not sufficient protection for children from threats posed by technology.

Our research suggests that the blanket approach of banning and filtering may not be the most effective safeguard. Not only was it vulnerable to advances in technology and digitally savvy children, but the children we interviewed were on the whole aware of potential dangers and adept at self-regulating. Where children found it easy to bypass the rules set by schools and parents they were dependent on their understanding of what constituted inappropriate or risky behaviour. As one interviewee put it:

> *My mum doesn't know what I'm doing but I don't do bad things.*
>
> Boy, aged 9

We found that frustrations emerged when parents based their decision-making on media reports or misconceptions rather than any real understanding of what their child was doing:

> *My mum saw a news report saying MySpace might not be safe and then I wasn't allowed on it all of a sudden.*
>
> Girl, aged 13

> *My dad won't let me go on MSN because he thinks it's a chatroom.*
>
> Boy, aged 12

Organisations such as Childnet International[25] are carrying out valuable work highlighting these issues and attempting to offer

parents, children and teachers support to navigate the web safely and empowering parents to enter into a dialogue with their child. For one child we spoke to this dialogue was central to his use of the internet:

> *Yeah, of course mum knows what I do! Our computer is downstairs in the hall where she can see it; she's always walking past and talking to me.*
>
> Boy, aged 9

Without this dialogue parents and teachers will continue to feel uncomfortable and rely on speculative reports about children's behaviour. Equipping children with the critical tools to make the right choices will make us more confident that they will be safe even when nobody is watching.

## Myth 2: Junk culture is poisoning young people and taking over their lives

In the autumn of 2006 the Inquiry into Good Childhood was launched by the Children's Society in response to rising anxiety about children's well-being.[26] A range of commentators and academics drew attention to the 'toxicity'[27] of modern children's lives, and many highlighted significant issues around obesity and mental health. At the same time, it was argued that technology has taken over children's lives and rendered a whole generation over-stimulated and addicted. Figures which suggest children are becoming technologically literate or dependent at ever younger ages seemed to confirm that this 'poisonous' influence was growing.[28] Meanwhile, parents and academics have noted the development of the 'digital bedroom',[29] with one survey showing that about 52 per cent of young people aged 16 or over now have a television set, a stereo, a video or DVD player, a games console and a personal computer installed in their bedroom.[30] Across the media the question was being vigorously debated: are children's lives becoming more compartmentalised, commercialised and organised around 'junk culture'?

It is important to remember that while many of these concerns are

valid they are not all new; youth culture has always challenged prevailing orthodoxies about behaviour and knowledge. The introduction of new media is also frequently greeted by fresh moral panic.[31] Where once TV was the sole culprit now the blame is distributed across a range of new media. Our conversations with children also demonstrate that while some may have phases of over-reliance at different ages most have a varied 'digital diet'. This was supported by the report of the research project 'Children, young people and the changing media environment', which remarked that:

> *New media rarely replace, or even displace, older media. Rather, new media add to the available options, to some extent prompting new, more specialised, uses for books, television, radio, etc., resulting in an expanding media mix as both old and new media readjust their positions in young people's lives.*[32]

So books still have their place in developing literacy skills, TV is primarily used for entertainment, mobiles are for texting and the internet is for MSN, homework and Bebo. Our diaries demonstrate how specialised and varied this use of technology can be, especially with respect to communication. Only very few children were reliant on the same activity day after day. As one young person summed it up:

> *Why would you want to be playing games or on MSN all the time? The same thing gets boring really quickly.*
>
> Boy, aged 15

Where once we spoke of 'computer literacy' now academics are pointing to a generation that is 'multiliterate' in several technologies. The more children are encouraged to expand their digital repertoire the more adept they will become at using different tools for different purposes in their everyday lives.

## Myth 3: No learning happens and digital technologies are a waste of time

Received wisdom suggests that digital technologies have very little to offer children when it comes to learning. Although we now know that young people develop a whole range of skills and capabilities outside the formal environment of the classroom, on the whole this understanding is not extended to gaming, texting or surfing the web. These activities are seen as having little value beyond entertainment, and certainly nothing that will enable children to succeed academically or ultimately in the workplace.

With 77 per cent of children in the UK having access to a games console,[33] gaming is one of the most common forms of digital entertainment. It is also one of the most controversial. The activity is notoriously absorbing, with many devoting hours of their time to it. Parents, teachers and policy-makers are generally resistant to the idea that gaming has anything to offer young people, many regarding it as violent, addictive, childish and antisocial. Nevertheless, there have been concerted efforts to rehabilitate gaming,[34] with many commentators stressing the positive aspects which remain less visible to commentators, and to the young people playing them. More recently writers have claimed a whole host of other 'softer' skills and challenged the negative stereotype of the lone teenage gamer.[35]

***New media, new learning?***

Our research indicated that children are learning a whole range of skills when interacting with each other, gaming or creating. This type of learning – anything which is loosely organised and happens outside the confines of the school gates – is usually defined as informal learning.[36] By definition it is nebulous and hard to identify. It is difficult to prove when and exactly how a child has learnt a skill, particularly when children themselves can have difficulty talking about and transferring this learning. Informal learning exists under the surface of everyday activities like staying

in touch with family and friends, and as children spend only 15 per cent of their waking time at school,[37] it is essential that we understand it. It is this type of learning which often provides children with the confidence to succeed in formal contexts. The 'digital skills' listed in table 1 are the ones most commonly identified by teachers, parents, academics and children themselves.

**Table 1 Digital skills**

| Social / Personal | Cognitve / Physical | Technical |
|---|---|---|
| Communication | Multitasking | Hand–eye coordination |
| General knowledge | Logical thinking | Technical confidence |
| Creativity | Problem-solving | Web design / content creation |
| Collaboration | Trial and error learning | |
| Self-esteem | | |
| Parallel processing | | |
| Persistence | | |
| Peer-to-peer learning | | |
| Risk-taking | | |

Children were divided about learning from gaming – two boys in a focus group had a spirited debate about the possible benefits of their favourite game:

> *You don't learn anything, just how to get to the next level.*
> *Yeah but you've learnt something haven't you?*
> *You've just learnt the game.*
> *Well then you've learnt something!*
>
> Two boys, aged 8 and 9

While children are often unable to identify exactly what they are learning, they are often ahead of adults when it comes to discriminating between those computer games that benefit them and

those that do not. Some games were considered to be pure entertainment, while other young people we spoke to were enthusiastic about the value of particularly challenging games, whether this meant improving hand–eye coordination through pinball, building up general knowledge through solving puzzles about Greek mythology, or improving logical thinking through brainteasers. Of course digital learning is not simply confined to gaming. These skills can be gathered from communicating, content creation and information gathering. One girl explained that her fluency working with html code, uploading videos and music and manipulating images was all the result of her commitment to maintaining her MySpace page.

Parents are also instinctively aware of this learning taking place; in our polling 47 per cent thought that digital technologies enable children to communicate in new ways, 43 per cent thought they were developing creativity and 18 per cent thought they were learning to collaborate with others. Only 3 per cent thought that they learnt nothing. We know that some digital activities foster more skills than others, but data such as this demonstrates that potential for technology to play a positive role in children's learning remains largely understated.

## Myth 4: There is an epidemic of internet plagiarism in schools

> *Cutting and pasting isn't cheating if you've read and understood it; that's just getting inspiration.*
>
> Boy, aged 10

In 2006 Alan Johnson re-ignited the public debate on plagiarism by announcing that Maths coursework would be banned. His comments reflected the prevailing view that internet cheating is endemic in schools with particular focus falling on boys.[38] Have search engines damaged children's cognitive ability to produce original work? Is this 'cut and paste culture' stifling creativity? Many argued that we needed

to respond by banning all coursework and developing failsafe methods of catching the cheats.

However, our research points towards patterns of behaviour which are unlikely to be tackled by blanket policy interventions. Trawling search engines and websites such as BBC Jam is not seen as cheating by these 'information gatherers' but the primary method of locating the answer. Just as their parents relied on an encyclopaedia these children universally use the internet for homework, with the majority having 'cut and pasted' directly into work on at least one occasion. Children are establishing a relationship to knowledge gathering which is alien to their parents and teachers:

> *I type a question into Google then I find the information I need – then copy and paste it. Looking in a book just takes ages.*
>
> Girl, aged 15

Of course, this approach is unlikely to help them succeed in an exam system still dominated by factual drill and recall exams. Perhaps more importantly, many are not capable of critically evaluating sources. Although search engines and web 2.0 sites are this generation's reference point, they are being employed with varying levels of sophistication. When asked whether he always trusted Wikipedia one boy told us that:

> *It is pretty reliable because if anybody is caught changing stuff then they get banned.*
>
> Boy, aged 13

While plagiarism is a real problem, it should not be conflated with the impact of new ways of accessing information. The significance of this cultural shift – also easily identifiable in the workplace – indicates that rather than focusing on the answers, teachers should be thinking more about the questions. We need to push children to think more critically about where they find their information, and how they interpret and present it for assessment.

## Myth 5: Young people are disengaged and disconnected

In March 2006, protestors took to the streets in the US in opposition to proposed legislation against immigrant workers. It wasn't just adults that protested. As Danah Boyd writes: 'Through MySpace postings, thousands of teens across the country walked out of school and marched in protest. In Los Angeles alone, 36,000 students walked out and took to the streets.'[39] On 31 August 2006 we saw a protest defending the right to protest in Parliament Square – which was organised entirely by email and blogging. So how do we square stories like this with those that see children as disengaged from formal politics and disconnected from their local area or community? The answer may lie in where we are currently looking for evidence of children's engagement and self-expression.

Our research yielded a range of examples where children or teenagers are using digital tools to get engaged and make unexpected connections. Mentoring relationships are common, the new charity Horses Mouth will build on this trend and is set to launch in 2007.[40] This website will connect teenagers and young people in need of support and advice with other young (and older people) willing to volunteer their time online. Other young people are expressing their cultural and political viewpoints enthusiastically in online spaces:

> *For me being a good Muslim means contributing about important issues, and I prefer to do that on my blog because most of my mates at school aren't interested.*
>
> Boy, aged 15

These virtual forums suit young people more than the traditional structures their parents are familiar with. Many children are also finding ways to connect with their local area in a way which fits with their enthusiasm for digital culture. Recent suggestions that we should focus on reintegrating children into traditional models of community involvement fail to recognise that as a society we are choosing new channels of engagement which are aligned with

modern life.[41] Rather than only encouraging children to join the Scouts or the Guides we could also learn from initiatives such as Pledge Bank,[42] which offers anyone the opportunity to donate their time to a cause they feel strongly about. There are many children in the UK finding new ways to be involved in their communities, but they are doing so on their own terms.

## Myth 6: We're seeing the rise of a generation of passive consumers

Despite the fact that a recent Guardian ICM poll found that a third of young people online have launched their own blog or personal website,[43] this generation is still considered to be one of solitary gamers whose experiences hinge on mindless consumption. Subject to a barrage of entertainment 'products' it is claimed that they are over-stimulated and, consequently, easily bored.

In reality, the new breed of web and technological breakthroughs is predicated on active participation. It is necessary to look to the benefits hidden behind activities traditionally classed as passive entertainment. Many academics and social commentators have been researching children's ability to interact with media on many different levels – some of them more active than others. As Buckingham et al have said:

> *There is a fundamental difference between the 'passive' knowledge that is developed through critical analysis and the 'active' knowledge that derives from production.*[44]

Many children are participating in active communities of interest built around production, whether these are based around World of Warcraft, music or Bebo. These communities provide opportunities for critical reflection and learning along with an audience for creative efforts. They are the 'creative producers' we identified in the glossary. Almost all of the children that we spoke to had some experience of active content creation, even if this only meant manipulating images with Photoshop or creating iTunes play lists. Wherever children are

located on this spectrum they are still actively participating in a rip/mix/burn culture very different from that experienced by their parents. There is also a significant and growing minority of young people who are confident with more difficult tasks such as making music, producing their own games or creating their own websites.[45] Practical research has demonstrated that a primary factor constraining young people keen to create their own video games was a lack of software which enabled them to create sophisticated end products.[46]

Many young people also exploit the anonymous nature of the web to overcome the age-specific requirements of the offline world. Zoomr, a direct competitor of Flickr, was created by a 17-year-old and many other children and young people have taken advantage of the growth in open source methods to build tools and edit content. This represents a new shift towards a generation that contributes actively to the public realm every day.

Throughout this chapter we have outlined some of the reactionary responses currently dominating public discourse and countered some of the most damaging myths. However, it is important not to move too far to the other end of the scale. There is also a set of positive myths demonstrating 'blind faith' in the power of technology. The more extreme versions caricature a whole generation of young people as digital natives and cyberkids,[47] all equally confident users of technology. Meanwhile, staunch defenders of gaming and web 2.0 risk presenting all digital practices as equally valuable, hailing each wave of technology as full of revolutionary potential. For example, rather than seeing technology as a tool that people use to change their lives, Professor Alec Broers argues that the primary benefit of technology is that it is capable of changing individuals for the better – as the title of his opening Reith lecture of 2005 put it, 'Technology will determine the future of the human race'.[48] The rest of this chapter goes on to explore and counter some of these 'positive' myths, arguing that where, how and what type of technology is used is as important as the equipment itself.

## Myth 7: All gaming is good

With the publication of *Everything Bad is Good For You* Steven Johnson drew together a convincing argument that gaming and other forms of entertainment have become more intellectually challenging over the last 50 years.[49] Before Johnson, James Paul Gee's influential study *What Video Games Have to Teach Us About Learning and Literacy* outlined the many cognitive skills that students are learning from video games.[50] In the American book *Got Game: How the gamer generation is reshaping business forever*,[51] John Beck and Mitchell Wade documented the ways in which today's young workers who grew up immersed in the world of video games are better suited to the modern workplace than their non-gamer colleagues.

While many of these books make valuable contributions to the debate, much of the media coverage of their arguments and other books like them can fail to distinguish between the different orders of activity. Children themselves can be shrewd critics of this type of thinking, developing their own hierarchies of use. When asked whether video games had anything to teach him one boy was quick to discriminate between 'shoot 'em ups' and more taxing fare:

> *If you play them all the time some games are only good for mashing your brain.*
>
> Boy, aged 8

Just as few would claim that all written material offers the same level of stimulation for children we should not expect all digital activities to be equally valuable. Meanwhile, far too little is known about the impact of different content, and more research needs to take place before we draw confident conclusions about its role in children's lives.

## Myth 8: All children are cyberkids

The narrative of the cyberkid or digital native[52] has become the dominant way of talking about a whole generation. Yet it is often based on research which gives undue emphasis to those highly

motivated technology users with access to networks of knowledge. As a result it assumes that all children are equally confident, able users of technology. This type of research has neglected the attitudes and everyday practices of the majority of young people, and too little is known about 'non-users' of technology.

Our research uncovered a gap between the 'everyday communicators' who carry out the same tasks repetitively, and those 'digital pioneers' who are exploiting the transformative potential of digital tools. Our diaries and focus groups suggest there are very few children in the middle band – carrying out advanced tasks occasionally. Clearly, before becoming a digital pioneer or the 'cyberkid' of popular discourse children need access to a set of basic skills from a trusted source.

On this basis several academics[53] have challenged the dominance of the 'digital native' model and examined the influence of the social context in which skills are developed. Our focus groups confirmed that family and friends were the main entry point into digital learning, and that contrary to research which has found mothers to be the main agents of learning in the home, male family members play a central role when technology is involved:

> *My brother does IT at college and he taught me the basics; after that I could teach myself.*
>
> Boy, aged 16

> *My dad works with computers; he first got me into it all – but now I show him what to do.*
>
> Boy, aged 15

Children do not find it equally easy to access this knowledge, and the complexity of their activities varies hugely as a result. This points towards the importance of differentiating between patterns of behaviour and understanding the types of learning which flow from these varying 'digital diets'.

## From everyday communicators to digital pioneers

This chapter has tried to challenge the narratives that dominate public debate and show that while we need to look beyond media hype, we also need to avoid the temptation of being blinded by the promise of new technologies. Rather than using new technologies to revolutionise their lives, our research showed that most children simply accept the ubiquitous place of technology as an unremarkable feature of life. For many children it is a case of 'old tricks, new tools'. The majority of young people we interviewed used digital technologies for simple and regular activities such as texting, talking on MSN or Googling their homework. One girl tried to explain:

> *We just do the same things, pretty much everyday.*
>
> Girl, aged 15

So MSN is supplanting the home phone when it comes to holding conversations with school friends rather than revolutionising children's social networks. These 'everyday communicators' are unlikely to use email frequently as it does not map onto the contours of their social interactions, it is too labour intensive and not instant enough.

The next chapter will look to the digital pioneers who have exploited technology in positive and exciting ways. We will begin to explore how their relationship with informal learning could be experienced by all children.

# 3. Learning from digital pioneers

## Seeds of change

*Well, I don't let school interfere with my education if that's what you mean.*

Raza is 16 and first began setting up his own websites when he was 11, 'long before blogging really took off', he explains proudly. So, did he learn to do this at school? He laughs. Raza is part of a generation of young people that is seeking and finding recognition for its skills and achievements in very different places, often without the support of teachers or parents. Being switched on to the next big thing is important to him; he was registered on MySpace before anybody had really heard of it, and much prefers Internet Relay Chat (IRC) to MSN: 'The best thing is when you're always the first one to know. Then it gets less interesting.' While his early websites focused on technology and gaming he now primarily uses them as an outlet for his thoughts about the political climate. He likes to design his own forums for debate, and blogs regularly with his views on everything from the war in Iraq to the latest laptops. He explains that it's one of the few places where anyone is allowed to contribute: 'The fact is, on the internet, age doesn't matter. No one can tell if the work is by a 16-year-old or a 60-year-old. In fact the work done by the 16-year-old is often better!'

Raza has established a number of websites, one of which gets 3000 hits a day, and he has developed his own network of technological

and political contributors, although few are friends from school. Instead, he frequently collaborates with international contacts who help him to develop his site and his skills. Meanwhile, his mum does not understand why he dedicates so much of his time to collecting kit and communicating with people he's never met: 'She keeps telling me I'm not being sociable, that it's unproductive.' He is also sympathetic: 'But my mother can barely use a computer,' he explains, 'the older you get the harder it is to learn, that's definitely what I've seen.'

Raza is always conscious of his 'presence' on the internet – especially having a distinctive name. 'Things catch up to you.' Maintaining his digital identity is as important as his offline image. One potential problem he saw in the future was individuals losing control of things in the public realm; as he said: 'For kids it's so easy to create stuff and then not see the implications because they're not "physically there"'. At the moment Raza is not officially recognised for his achievements: 'This summer I just ended up getting a job in a call centre; they were only interested in the fact that I could touch type.' Meanwhile, in his spare time he builds websites and charges a fee, once he has convinced his client that he isn't too young to do a good job.

So what motivates Raza? Is it being ahead of the curve? His passion for political expression? Or his desire to work with people across the other side of the world? What is he learning? Is it a more sophisticated understanding of how to build websites, or how to collaborate? And where did he gather his knowledge? Did he learn through trial and error, from his peers or from his parents?

The answer is, of course, all of these. Like all self-motivated learners, Raza is finding knowledge in unlikely places and he's learning a huge range of skills in the process.

## Seeds of change: four characteristics of informal learning

In the last chapter we demonstrated that all children's digital activities are commonly grouped under one umbrella, and that little effort has been made to learn from children who interact creatively with digital culture. This chapter will look to 'digital pioneers' rather than

'everyday communicators'. Raza might seem exceptional in his sophisticated use of technologies, but there are characteristics that he has in common with other young people like him. Drawn from our conversations with young people these shared characteristics are seeds of change for the ways all children could learn from their digital interactions.

### Self-motivation

Nobody tells Raza what he should be learning, and very few of his activities have tangible rewards. Impressing his school and his parents rarely figures in his objectives; he defines his own goals. Gaining the respect of his peers, satisfying his own high standards and expressing himself politically are some of the many things which drive him to master new skills. Like many of those teenagers we spoke to who regularly post on MySpace, he was motivated by the idea of a wider public coming into contact with his creations. For children pursuing their own interests online it is this element of self-determination which marks their behaviour out from school, family duties or part-time work.

### Ownership

If digital activities tend to be self-motivated then they are also likely to be 'owned' by the individual child or group of children. It is clear that possession of their creative output would be damaged if an adult were to set the parameters of their activities. This is exemplified by a voluntary project which brings together a group of young people for a few hours a week to learn about and make films in Peckham. While there is adult supervision, this group of teenagers very definitely 'own' their animation projects. They make the decisions, talk about ideas, write treatments and scripts, and then act, film and edit. They enter competitions and have collections on DVDs of the films they have made – they are also just about to launch their own channel on YouTube. This group are proud of their outputs and they all share a sense of joint ownership which distinguishes their activities from schoolwork.

### Purposeful

The government response to Paul Roberts' Report of 2005/06 in November 2006 highlighted the importance of creativity with a purpose,[54] and this principle was in evidence across all forms of digital creative production we encountered. Digital pioneers always had end goals in mind, although these were unlikely to be recognised by any formal assessment system. Their aim may only be finding an audience to critique their work or designing a game rather than playing one. Three children we met at a youth group in Chelsea who learnt how to use a complex piece of computer software had their own distinct motivation. They wanted to be able to record and edit a film of a dance their friends had rehearsed for a festival. Having this objective made their learning more purposeful: 'It's more fun when you've got something to show for it at the end, isn't it?'

### Peer-to-peer learning

Unlike the classroom, few informal digital activities are organised around a central authority or pedagogue. When asked where their knowledge was from, almost all children refer to the central role played by their friends or siblings. This 'horizontal' knowledge transfer maps well onto informal learning, dependent as it is on casual exchanges and loosely organised activities. Few of the digital pioneers we spoke to could have gained expertise without peer-to-peer learning, as one boy explained to us:

> *My friend showed me how to build a website and I showed him how to get into World of Warcraft.*
>
> Boy, aged 14

In arenas such as gaming, music or web design children find that knowledge is more likely gained from conversations with someone of their own age than a parent or a teacher. They feel comfortable blurring the line between teacher/student or professional/amateur – exchanging knowledge every day.

These four characteristics are not only confined to learning outside school; elements can also be transferred to the classroom without being subsumed into formal learning. We found exemplars of excellent practice where schools were working to do exactly this.

## Silicon in the valley

A small, traditional-looking primary school nestling in a Shropshire valley with only 54 pupils received 26 visitors in one week last year – so what makes Stiperstones so special? The headteacher, Mark Klekot, sees the school very much as a community resource and has succeeded in realising the potential of technology for his pupils. Two and a half years ago, working in partnership with the pub down the road, he installed wireless that can be accessed by anyone, anytime the pub is open. 'It's funny seeing lads down there with a pint in their hand at the computers, but they do use them.' This was the first step in a plan to get the whole community online.

Every child at Stiperstones has their own laptop, which they are allowed to take home whenever they want. This came about through a slow process of meetings, discussions and deliberations with parents, teachers and governors. This buy-in was crucial; once the laptops were purchased parents came into the school for a course on the basics so that they would feel comfortable supporting their children at home. At the moment the students are not allowed to connect the laptops up to the internet, but that is all changing. There is even talk about linking all the students' homes to the internet so that the school can go fully wireless.

The pupils at this school were aware of how fortunate they were; the children moving onto secondary school were far from happy about the comparatively poor provision that they could look forward to. At Stiperstones technology is integrated into school life in the same way as any other resources. The pupils were always free to use laptops to work on, but it was just as acceptable to use pens and paper. As Mark said: 'It's horses for courses, as with any learning style. Last year we had a kid in year 6 who always wanted to write rather than type, he just preferred it.'

Perhaps most excitingly the school exploits the participatory potential of technology, with whole class 'silent' debates conducted MSN style. They cover a wide range of issues ranging from what questions they'd most like to ask their new headteacher (Mark is moving on next term) to PSHE issues and what rule they should all abide by if they're going to take the laptops home. These conversations were mediated by Mark and played out at the front of the classroom on the interactive whiteboard. 'It makes me want to type faster,' one boy said as he mimed typing slowly with his index fingers. 'At the moment I can usually only manage to say one thing!' Others agreed and were also quick to point out that everyone always contributes. 'It's not as scary as speaking in front of the whole class, and it's easier because not everyone is shouting out.' And it's anonymous; only their ID number comes up, not their name so they are liberated to say whatever they're thinking.

It's not only the innovative use of technology that makes Stiperstones such an interesting and successful school, but the ethos of the school across subjects and classes. Teachers feel confident enough to encourage children to experiment and they work in line with the interests of the students as far as possible. Yet there is a strong sense that this approach can be taken too far: to foster spontaneity and creativity you need to remember that 'innovation dies in a measurable and accountable model'. Mark is clear that some tools are not suitable for school; part of the reason children enjoy them is because they are not part of a formal system. Above all, technology is successful here because it has the support of an enthusiastic leader and has been adopted across the whole school in a way which reflects children's lives.

## Building a bridge

Stiperstones is just one of a growing number of schools that have seen the potential of digital technology and that work to align themselves with the way that children approach informal learning without seeking to replicate it wholesale. As with the individuals we discussed at the beginning of this chapter it is possible to find common

principles which are enabling teachers and school leaders to innovate in this way.

If investing in hardware does not create the conditions for this type of digital innovation to flourish, then what makes it possible for schools like Stiperstones to be successful? Schools face many problems in adopting new practices which challenge orthodoxies about how children should be taught in schools, but the following characteristics are common to many examples of good practice.

### Leadership

We found that leadership was a key component in creating conditions for digital innovations to flourish. At Stiperstones, Mark Klekot's vision for the future of the school was an essential component of its success in integrating technology across the curriculum. At the other end of the spectrum we spoke to one young teacher at a high-performing school, who explained how, without an overarching vision from the head, expensive and powerful equipment lay idle – software was used only to take the register. So leadership in terms of vision is crucial, but also in terms of generating a culture of risk-taking and innovation. One of the headteachers that we spoke to captured this perfectly: 'Of ten ideas, three will get off the ground, and one will be a success, and that's all we can ask for.' Schools that are really pushing the boundaries in terms of new teaching and learning strategies fostered a culture of trial and error, where success was rewarded but other ideas fell by the wayside.

### Empowered teachers

This characteristic goes hand-in-hand with the kind of leadership we talk about above. All those schools experimenting with different media relied on the enthusiasm of individual teachers who exploited the potential of new technologies. These teachers were supported to develop their ideas and were knowledgeable enough to feel confident working with children who spanned the full range of abilities. Peter Winters at Monteney Primary School in Sheffield has set up a 'dinoblog' for his year 3 pupils and has linked up with a school in the

US that has its own blog. The children can carry on their own long-distance exchange of images and ideas. Blogging is one in a range of digital tools that empowered teachers are using to stimulate and engage students.

### Fully integrated technology

At Stiperstones every child has their own laptop, but using technology creatively does not need to follow this model. At Thomas Hardye, a secondary school in Dorchester, each student does not have their own laptop to take home, but the development of digital skills is certainly not compartmentalised in an IT suite. Every core subject has a designated IT room, except for Science where sets of laptops are used. Whether manipulating images to illustrate a History essay or using computer-aided design (CAD) in Design and Technology lessons all children feel confident using the resources throughout the school day. This approach mirrors the casual, ongoing use of technology which characterises children's experience in their everyday lives.

But this approach is not system wide. The next chapter goes on to explore how these principles could be used to bring about a culture shift in schools.

# 4. Start with people not PCs

## How schools can shift investment

The last chapter discussed a set of principles drawn from the experiences of digital pioneers and exemplified in formal and informal learning environments. Key messages included leadership, culture and ethos, self-motivation, purposeful creativity and nurturing new models of learning such as peer-to-peer exchanges. So what does this mean for all schools? It means that they need to really listen and respond to their users.

Our research has shown that we should have greater confidence in young people than we currently do. They have higher skill levels, awareness and self-reflection than they are usually given credit for. In order to enable all young people to make the most of the skills and capabilities they build up through their interests and passions, schools need to value those skills and provide a space to reflect and build on them. Crucially this does not mean absorbing that learning, but building on and going with the grain of how young people are already doing it. This chapter outlines how schools need to reframe and understand three sets of relationships – between students and their formal learning, between young people and their wider social networks, and between school and home, in order to release the potential that digital technologies offer.

## Investing in relationships

In order to see change across the system, there needs to be a shift in thinking about investment. Rather than investing in hardware, schools need to think about investing in relationships and networks. To people within the education system this will come as no surprise; as we discuss in chapter 2 new technologies should not be seen as a 'silver bullet' or as a driver of change within themselves. In the last ten years we have seen a staggering change in the hardware that schools have as the norm, from a single computer in the school office to laptops for all teachers, from blackboards to interactive whiteboards and from school newsletters to websites. While this type of investment is important, particularly when it comes to children and teachers feeling valued, it has not had the impact on teaching and learning that we might expect. The standard model of teaching with 30 children in a classroom with a teacher at the front remains the same. This is because fundamental behaviours have not changed. The potential of new technologies will be realised only if the relationships and behaviours that underpin the school structure also change.

Schools need to invest in three sets of relationships:

- The first is the relationship between the student and their formal educational experience. Schools need to find ways to make this more meaningful and more engaging by building on their approach to informal learning experiences and providing spaces for critical reflection.
- Second, schools need to develop a deeper understanding of the relationships that young people have with their parents, families and wider social networks outside school and how this impacts on their learning.
- Finally, we argue that schools need to develop strategies to bridge these two worlds. This is not about subsuming or absorbing informal learning into the formal environment, but finding ways of connecting these different learning experiences.

## Relationship 1: Students and their formal learning experience

Over the last 20 years, education has become one of our most urgent priorities as a society. From Blair's campaign strap line in 1997 'Education, Education, Education' through to David Cameron's recent claim that 'improving quality and standards in schools is, for me, both a political and personal obsession', it has dominated much political debate on both sides of the house. But it's much more than rhetoric. Participation and achievement have risen with 38 per cent of 18-year-olds in full-time education in 2005 compared with 17 per cent in 1985,[55] and a 57 per cent increase in students in higher education from 1990 to 2000. Schools spending will be 65 per cent higher in 2007/08 when compared with 1996/97.[56] We know more about how the system is performing than ever before. But despite this we are reaching the limits of what the current system can do. Even if it manages to reach ambitious targets for literacy, numeracy, basic skills and qualifications, it will not meet the needs of its students if it does not change more radically.[57]

Since 1997, we have seen major investment in public services and a wholesale and cross-partisan shift in how we see delivery – it is only by users and providers working together that transformation will be realised. Recent debates about public service reform have centred on the need to personalise services, to start with the needs of service users, and design services around them. So we need to think about users as designers. Schools need to do three things: start with the interests and passions of their learners; provide spaces to reflect on and value the skills developed outside informal settings; and equip children with the right tools to make the most of those skills.

### Re-connecting with learners

One of the key differences between learning that goes on outside the classroom and learning in the classroom is that informal learning is driven by the interests, enthusiasms and passions of the individual. This is the opposite of the approach in schools; too often teachers

assume they know what children are interested in.[58] In fact, the only way to know for sure is to start with their interests and let them take the lead. This can be particularly effective when attempting to engage alienated young people who are having difficulty achieving within the parameters of the formal education system.[59] For example teachers could spend more time talking to parents about what their children are doing at home and how they're spending their spare time, and less about progress and performance in class. One school that we visited asks children to fill in a quick questionnaire each term that tracks their changing passions and interests from horse riding and football to painting and cooking. These interests are used within lesson planning to ensure that, as far as possible, lessons start with the interests of the children.[60] So, we need a responsive education system – one that listens to children's passions and considers what learners bring into the school as well as what an education system pushes out.

### Making the most of informal learning

But it is not enough to simply listen to children and orient lessons around their out-of-school practices. Schools need to do more than this in order to recognise the value of, as well as build on, the new kinds of learning that are taking place. They need to create spaces for students to reflect on their learning and articulate their thoughts about it, which will enable them to transfer their skills. This is about:

> *recognising the new kinds of learning they are undertaking outside school and accepting that some of those emerging skills, knowledge and understanding need to be developed further in an educational environment.*[61]

There has been significant research into how this can take place.[62] Meta-cognition is at the heart of it: the capacity to monitor, evaluate, control and change how one thinks and learns. In less formal terms this means reflecting on one's learning and intentionally applying the results of one's reflection to further learning. In this context it means

reflecting on the kinds of skills young people are developing outside the formal environment. The rise of online, multiplayer gaming and web 2.0 has created a generation that feels comfortable with collaborating on a continuous, casual basis. From contributing to a Wikipedia entry, devoting hours to World of Warcraft or building a website dedicated to expressing their political frustrations there are a multitude of skills that are currently failing to transfer across to schools.

Young people often struggle to explain why they like technology or to articulate what they are learning – this reflection could happen within formal education.[63]

### Developing tools to navigate a digital world

Young people have access to vast resources of information on demand. In the coming years the process of locating knowledge through search engines is likely to become faster and will yield increasingly sophisticated results. The speed of change in the world, the diverse sources of information and media we encounter daily are making what you know less important than how adept you are at knowing where to look. The skills that we need revolve around distinguishing sources of information that are trustworthy from those that lack credibility and being able to filter, summarise and critically analyse a vast range of different sources.

In the same way that we are able instinctively to evaluate and distinguish between information from the *Sun*, *Telegraph* and *Guardian*, young people need to be able to do the same with websites. Employers express concern about the fact that graduates are technologically literate, but not necessarily media literate.[64] The dominant metaphor for the internet is a vast encyclopaedia, especially among younger users who have grown up relying on it to complete homework. Yet the skills needed to read a traditional print encyclopaedia differ hugely from those needed to interpret materials on the web.

Schools should be places to develop media literacy.[65] Young people need to be able to process sources and to understand what to do with

the information that is available on so many platforms. Schools should support students to find information and develop skills around what to do with it: evaluating, critically analysing, prioritising and summarising.

Second, safety is of paramount importance for schools. Most have met the concerns of parents by blocking as many potentially risky sites as possible. Schools undoubtedly need to have a cautious approach to these issues but they also need to be places for children to actively learn about safety. If students are not given the confidence to make the right choices in school then how will they be able to exercise their judgement in the home? In chapter 3 we touched on the 'dinoblog' at Monteney Primary School. Peter Winters has also used the blog as a real life context in which to encourage the children to learn about safety issues. Although he originally had misgivings about their ability to safeguard passwords he found he was quickly able to instil a sense of responsibility in his pupils. In this way, schools can become a reliable source of a safety code of conduct for children who may not always be able to develop this on their own.

All of these responses point towards putting learners at the heart of their educational experience. To really put students at the centre of their own learning, there needs to be a fundamental shift in the power relationships that govern the majority of interactions between students and teachers. Rather than thinking of themselves as only directors, teachers need to re-imagine themselves as facilitators. Technology in the classroom currently does little to promote this shift; interactive whiteboards are too often employed as a high-tech version of chalk and talk. Children's independent, exploratory behaviour when learning with digital technologies can conflict with this approach, leaving them frustrated with the pace of pre-planned lessons directed by the teacher. Meanwhile, the expectation that teachers will always know more than pupils is disrupted by the fact that children are often more confident users of digital technologies than adults. Schools need to use technology more creatively so that teachers feel empowered enough to let children set the pace. Using tools that children feel comfortable with can foster a cultural shift;

wikis, blogs and MSN can offer platforms for teachers and pupils to interact more spontaneously. What if pupils could ask their teacher questions about homework on MSN? Teachers need to exploit a range of tools for communicating with their students and encouraging them to transfer their expertise in informal learning across to the formal sphere.

## Relationship 2: The new digital divide

The concept of the digital divide was made familiar by a raft of studies which have amply illustrated how ownership of and access to digital media is constricted by socioeconomic status, social networks,[66] age and gender.[67] As hardware becomes cheaper and within the financial reach of most families – in 2002 81 per cent of school children had access to a computer at home[68] – digital inequalities emerge in other areas, such as broadband connections and software ownership. Consequently, much research is focusing less on ownership of technology and more on the wider social context in which it is used. It has been suggested that equipping families with internet connections and PC access is not sufficient to ensure continued usage.[69] Instead, access to the social networks that reward and promote such activities is a stronger predictor of use. Communities of interest which develop skills can be found across all types of activities; Caroline Pelletier's research finds evidence of the knowledge and critical literacies that informal groups of game players sustain, but she notes that: 'the extent to which players develop these relates largely to their social circumstances; many young people have little access to the social contexts that enable and, most importantly, motivate critical consideration of games'.[70]

Schools have an essential role to play in redressing the imbalances caused by this new digital divide which is based on access to knowledge not hardware. Those children in our research who were creative producers of their own content had gained their confidence from peers, older 'digital mentors' and informal knowledge-sharing networks. These networks can be virtual or physical but they are always dependent on pockets of knowledge and good social

connections. As these children move into a workplace operating within the knowledge economy their access to these networks will become a strong predictor of their success. Consequently schools need to find ways to enable young people to derive the more positive benefits gained from using digital technology in these contexts. This could involve allocating resources to out-of-school groups similar to The Hub,[71] offering evening classes for parents in ICT or creating online spaces which enable young people to reflect critically on their work and on the work of others.

### Relationship 3: Bridging two worlds

Just as BlackBerries and broadband have dissolved the border between work and home for adults, new technology is also blurring the boundary between home and school. Children can now download French vocabulary onto their iPod – making entertainment and learning devices interchangeable. Perhaps more crucially, though, it enables children to do their homework on the way home without anyone knowing. Other schools are preparing to allow parents to check their child's attendance and attainment records via web portals. And this pace of change is set to accelerate as sophisticated mobile learning devices become affordable for schools and software packages improve. Music packages for mobile learning which can be used at home to create music and then be taken back into the classroom to develop one stage further are set to become widely available. Children will carry their information with them and will be able to access school resources remotely, just as memory sticks have made it possible for us to move flexibly between computers rather than being reliant on a single PC or laptop.

Schools need to set their own agendas around bridging home and school. This is not about trying to formalise the informal; rather it is about using this newly emerging third space in ways that stimulate students and enable them to transfer their skills. Forty-seven per cent of the parents we polled for this research thought that schools should showcase children's creative digital work. By offering online resources such as this to parents and children they can find ways of recognising

and rewarding creative work without subsuming it into the formal system.

This chapter has laid out a set of changes that when taken together add up to a shift in values: a shift in terms of the kind of investment that is needed to reach the potential for change in the system, and a shift in terms of the kinds of skills, experiences and relationships that schools value. Shifting schools' value systems in this way will create more meaningful learning experiences for young people, and also more active and engaged learners. It will also enable schools to reconnect the currently disparate parts of young peoples' lives – in school and out of school – and enable them to transfer knowledge and skills across a whole range of experiences. But finally it is important because by building on young peoples' interests and enthusiasms, and doing it in ways that are going with the grain of their lives, schools will succeed in effectively providing all young people with a set of tools that they can use far beyond their formal learning experience.

# 5. The world has changed so why haven't we?

## An agenda for change

The history of the internet is one of an ever-changing set of machines and technologies with a particular set of social benefits and behaviours hardwired into it – of networks, participation, collaboration and co-production. This set of behaviours should have huge relevance for the way we see the relationship between new technologies and learning.[72] Although some view the genesis of the web as a piece of military technology, in reality it was a tool for scientists to share information. The idea that information should be free – that you don't have to pay to send an email – comes from the way that the original internet protocols were set up. It is still the case that anything online is subject to review and comment, even if not on the site where it was originally posted. In a recent book, Pekka Himanen tries to explain the 'hacker ethic', the passion for technology that drives hackers to spend hundreds of hours programming code quite often for no financial gain. He describes the seven values of the hacker ethic as: passion, freedom, social worth, openness, activity, caring and creativity.[73] Even for the everyday user, the internet continues to challenge what we think of knowledge and where that knowledge can be found.

Throughout this report we have argued that the current generation of young people will reinvent the workplace and society. And they will do it along the progressive lines that are built into the technology. The

challenge for schools is to take the tools that are currently available and use them to support and in some cases challenge traditional teaching and learning techniques. Schools need to recognise that the change in behaviour has already happened, accept that the flow of knowledge is both ways and do their best to make sure that no child is left behind.

The last chapter spoke about releasing resources and reconfiguring relationships in schools in order to provide learning experiences that are both more engaging in the short term and valuable in the long term. Crucially, this would enable schools to reconnect with what young people are currently doing, and support them to develop the skills they will need in the future – from collaboration to creativity, self-confidence to media literacy. This shift in values and ethos is crucial to create change in schools. However, changes at individual school level are not enough. The potential needs to be grasped at multiple levels of the system, at the same time, in order to have a powerful effect.

This chapter lays out a set of opportunities and challenges for the government and for school leaders and their staff. These suggestions are all drawn from the conversations we had with young people operating within the education system as it stands. This agenda for change points towards an educational experience that would begin to bridge the gap between the learning that young people are doing outside the classroom and that which goes on in schools.

## Government

*Headteachers often bemoan the fact that they operate within a centrally driven, top-down accountability context with a content-laden curriculum. This creates a culture where it is incredibly difficult to take risks. Although this report has looked at some exemplary schools working in innovative ways, they are doing so despite the system. Part of the response to address this is undoubtedly about developing the national curriculum to give more emphasis to creativity and innovation, but curriculum and assessment are only one part of the puzzle. In the same way that distributed leadership can foster innovation and creativity in*

*schools, we need a strong national agenda that supports and enables schools to make change on their own terms.*

### Control of the Creative Portfolio

The recent Roberts Report 'Nurturing creativity in young people'[74] recommends that every young person should be given the opportunity to build up a creative portfolio alongside more traditional forms of assessment. This will be a resource for students who are achieving in different spheres to capture and share their work with potential employers, friends and higher education institutions. We argue that to gain real credibility, young people need to be given full control over who has access to this portfolio and when. Children are already posting an increasing amount of content on the web and this leaves them without the option of controlling who is able to view it, something which could have repercussions when they enter the workforce. Through the introduction of a Creative Portfolio we need to give them ownership of a system which allows them to identify their own milestones, tag their inputs in a number of ways and control levels of privacy and audience access.

### Combating the traditional digital divide

Policy-makers need to continue to address the traditional digital divide by working with schools to maintain efforts to ensure that all children have personal access to digital resources. While fears around the impact of the digital divide in terms of access to hardware have lessened in recent years, research indicates that there is a small minority that is missing out. This group of learners is often the most vulnerable to being left behind academically, making the existence of yet another inequality even more damaging. A national strategy needs to set this agenda, while recognising that schools are uniquely positioned to identify and meet the needs of their students. Backed by government resources, the leadership and responsibility for this initiative needs to be concentrated at school level. Schools should take responsibility for delivering the hardware, whether this means a laptop, tablet or a mobile device for every child. Where such an

investment is not sustainable schools could look for more creative ways of supporting the community.

### Capacity-building and consultation with parents

Alongside this investment in hardware there needs to be a much more sophisticated understanding of how investing in hardware impacts on families. What role do families play in its ultimate success or failure? We know that technology is simply a tool, and without a social context that promotes creative and constructive use it is unlikely to achieve its full potential. Policy-makers need to work with schools to provide parents with the skills to help their children interact with technology confidently and safely. Backed by more research about how to meet the needs of hard-to-reach families, resources should also be made available for IT classes for parents as well as children. This further develops and extends the trend of schools being extended family support centres.

### Users as designers

Over the past decade pupil voice has risen up the policy agenda, but so far it has failed to capitalise on children's expertise in technology. By seeking to further promote and share effective practice in schools' use of the 'student voice', policy-makers could empower children to participate meaningfully in their school. Technology represents both a route to doing this (through school websites, wikis or MSN-style debates) and a reason for doing so. More broadly, the Children's Commissioner[75] should convene a working group of children to advise on children's use of technology. Contributions could include producing age-appropriate safety or 'usefulness' ratings for websites.

### Bringing homework and coursework into the twenty-first century

The skills of memorising and recalling which are so integral to the assessment system as it stands today will be considered far less relevant for the employee of the future. The assessment system needs to be developed away from these skills of memorising and recalling

towards the essential skills of evaluating information, synthesising different sources and using these to produce analyses rather than 'right answers'. The answer to plagiarism does not lie in banning coursework. We recommend that the nature of the questions asked is updated to reflect the tools and skills of the current generation young people.

## School leaders

*School leaders are key actors in re-imagining schools for a digital future. They have to recognise that their students are a resource to be unleashed; that they have the knowledge, skills and understanding to contribute to and develop their own learning experience. This approach to teaching can be scaled up to reframe the role that young people play in the whole school system. Leaders need to think innovatively about the resources already within their school and how to mobilise them all to make maximum impact, from reinvigorating ICT lessons, to embedding technologies across the curriculum. This is about focusing on small levers with the potential to create big change.*

### Reverse IT lessons

School leaders need to encourage teachers to move away from reliance on directing children's learning in ICT and towards acting as facilitators or guides. Given children's confidence with technology this change would align the classroom to the outside world. As our research demonstrates, children are already in a position to teach adults about digital media in their everyday lives. Consequently the current model of ICT lessons fails to acknowledge their expertise or their exploratory approach to learning. By 'reversing IT lessons' so that children can share their knowledge with other pupils and with their teacher, school leaders can pilot an approach that could see pupils taking ownership of their learning across the curriculum.

### Peer-to-peer technology tuition

When it comes to technology, young people learn best from one

another. Our conversations with children confirmed that the majority had accumulated their repertoire of skills from their family or friends, and only rarely from ICT classes. Children are already exchanging knowledge in this way every day; school leaders should start to recognise that this expertise is at their disposal. Through encouraging peer-to-peer technology tuition schools could reinforce and encourage a style of learning that already takes place widely beyond school. This would have the additional benefit of developing collaborative skills which are often under-emphasised in the current assessment system.

### Digitally literate teachers

We have argued that teachers are not trained to use new technologies adequately and this has a profoundly negative impact on their confidence. If digital media in schools is to move beyond the ICT suite and become truly embedded across the curriculum then all teachers need to feel empowered to use it creatively. School leaders need to build up support and professional development to ensure that all staff feel empowered to use the technologies that resonate with their students. Teachers need to be familiar with sites such as BBC Jam, MySpace and Bebo so that they can find new and engaging ways to work with their students. By extending their use of email towards an informal dialogue with their students about ongoing learning teachers can open up new channels of communication.

### Cool tools monitor

People use digital tools daily in their personal and working lives to powerful effect, and children are often at the cutting edge of finding or even creating these tools. Schools need to draw on this experience to identify all the digital tools which can help them to teach creatively. Nominating a student to keep track of these programs or websites would be an easy and effective mechanism of doing so. A cool tools monitor could explore the potential of Flickr for either learning or for building up a tangible school identity, use Del.icio.us to help students manage their knowledge and build on the research of their peers, or

blogging for pupil voice. These pupils would aim to bridge the gap between how children are working and learning in their own free time and how they might do so at school.

### Del.icio.us for schools

One of the most consistent concerns expressed by the young people we spoke to relates to the unmanageable scale of the web. They found it difficult to prioritise their search results or judge the reliability of their sources. As a result they were dependent on a limited number of specialised sites, although many were aware they were not exploring the full range of sources available. Building on the idea of a 'cool tools monitor', Del.icio.us could be used by individual schools or by a whole network to create a shared database of useful sources. Acting very much like the school library has done for previous generations, students and teachers could build up this resource and tag each entry with relevant and useful key words, creating a reliable bank of knowledge for all to use.

### A class wiki

Collaborating online has become second nature for young people playing multiplayer online games, but we found that this willingness to work together rarely extended to schoolwork where notions of 'cheating' and an emphasis on individual achievement still dominate. Schools have an important role to play in ensuring that digital collaboration is transferable to the offline world. Almost all children use Wikipedia, but schools have been slow to react to the collaborative potential of this software. Collaborative projects, dependent on students contributing to, editing and reflecting on each other's work, could be integrated across the curriculum from Art to Science. This type of learning experience would prepare young people for the workplace where such skills will be highly valued.

# Appendix A

## List of attendees at the project seminars

Enid Bibby, Headteacher, Woodgreen High School
Amanda Black, 14–19 Policy Advisor, BECTA
Stephen Carrick-Davies, Chief Executive, Childnet International
Anne Casey, Partnerships for Schools
Sue Clark, Head of Communications, BBFC
Colin Conner, NCSL
Jonathan Dale, NCSL
Charles Davies, Editor, *Pick Me Up* magazine
Julia Davies, Lecturer, University of Sheffield
John Dyer, Education Officer, BBFC
Gavin Dykes, DfES
Ken Dyson, Education Consultant
Keri Facer, Director of Learning Research, Futurelab
Adam Gee, Creative / Commercial Director, Channel 4
Clare Harcup, Commissioning Executive, DCMS
Jean Johnson, Project Director, Ultralab
Neil McLean, Executive Director, BECTA
Paul Miller, Demos Associate
Richard Millwood, Director, Ultralab
Steve Moss, Education ICT Adviser, Partnerships for Schools
Peter O'Hagan, Research and Innovation Director, Serco Learning
Tony Parkin, Specialist School and Academy Trust
Aidan Prior, Steljes

Mark Reid, Teacher Development Officer, British Film Institute
Tony Richardson, Executive Director, e-strategy, BECTA
Clare Riley, Group Manager Education Relations, Microsoft Ltd
Anne Sparrowhawk, Director, TEEM
Michael Stevenson, DfES
Tim Tarrant, Training and Development Agency
Lucy Walters, QCA
Shelagh Wright, Demos Associate

# Appendix B

## List of project interviewees

Darren Atkinson, Edunova (25 May 2006)
Stephen Carrick-Davies, Childnet International (25 May 2006)
Julian Sefton-Green, Academic and Writer (26 May 2006)
David Buckingham, Institute of Education (6 June 2006)
Cary Bazalgette, BFI (14 June 2006)
Valerie Thompson, e-Learning Foundation (15 June 2006)
Neil Selwyn, Cardiff School of Social Sciences (20 June 2006)
Caroline Pelletier, Institute of Education, London (21 June 2006)
Jackie Marsh and Julia Davies, Department of Education, Sheffield University (14 July 2006)
Gil Valentine, Leeds University (14 July 2006)
Aidan Prior and Adrian Hall, Steljes (17 July 2006)
Gareth Mills, QCA (26 July 2006)
Keri Facer, Futurelab (15 August 2006)
Richard Millwood, Ultralab (24 August 2006)
David Crossley, Specialist Schools and Academies Trust (14 November 2006)

# Notes

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8 AK Chowdhury, UN Under-Secretary-General and High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States, statement to the Shanghai Symposium on the Creative Economy, 15 Dec 2005, Shanghai, China, see www.un.org/special-rep/ohrlls/Statements/15%20dec%2005%20-%20creative%20economies.pdf (accessed 12 Dec 2006).
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