Transforming Schools for the Future?

A collection of provocation papers

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Contents

Toshiba in partnership with Futurelab has produced this collection of provocation papers to stimulate discussion and debate around the future and transformational aims of both the Building Schools for the Future and Primary Capital Programmes.

Foreword

The Building Schools for the Future and Primary Capital Programmes represent an ambitious, unique, once-in-a-lifetime opportunity to provide services for children, young people and the wider community that will guarantee them an engaging and dynamic set of new educational experiences. It is vitally important we do not miss the real opportunity to transform education in doing so, and that we seize the opportunity to innovate and drive forward learning experiences in keeping with the needs of the future, reflecting the skills, competencies and needs of the wider society, our local communities and the changing nature of society in response to the global opportunities and challenges we face.

It is essential we do not repeat past mistakes, yet also vital we learn from successes, the wealth of knowledge we have about learning and what works, drawing on literature and evidence from a range of contexts. In this sense, we have the opportunity to design not only new buildings but also new systems, relationships and networks for learning.

It is vital therefore that BSF and PCP are not viewed or delivered as merely building programmes. It is no use building old schools and systems, only made from new materials. It will be a missed opportunity if we only use these programmes to address current needs and immediate solutions for our institutions and the educational stock.

The language of transformation pervades all the main policy documents that introduced the programmes. Whether transforming services to support the delivery of the Every Child Matters agenda and the Children's Plan, or to embed a new approach to learning and its organisation through personalisation, the underpinning policies call for significant systemic change.

Yet, to really mobilise the transformational opportunities requires a concerted and continuous effort by all those involved, from heads and governors, pupils and parents, local authorities and politicians, through designers and architects. Every single stakeholder involved in the delivery of these programmes needs to understand the opportunity they are being offered.

However, we also need to exhibit other qualities. Firstly, we need to break free of our traditional and institutionalised ways of thinking, to think more creatively and to innovate in order to bring about alternative and more fitting solutions to the educational needs for the future. Secondly, we need bravery - the courage to explore new opportunities, to follow these through with conviction and to develop models of learning and designs that are different and more appropriate than what have gone before, and this can mean challenging our own assumptions. Thirdly, and perhaps most importantly, we need belief - the belief that every one of us can bring about transformation as an active change agent through exercising our democratic right to be involved with the development of services that affect us and, most importantly, the young people we serve.

We need to ensure we do not embody old and outmoded practices in bricks and mortar and glass and steel, but that rather we build in the pedagogies and practices appropriate for 21st century learning. We have to rethink what a learning space is, who learns there, who are the teachers, mentors and support staff. We need to challenge what is learnt, by whom, when, where and how, and we need to consider how new developments and technologies present new opportunities for new learning networks and arrangements that offer greater diversity in learning approaches, and how foci and groupings might best be utilised.

When we hear stories of children or schools who are thought to be underachieving, often it is our instinct to lay the blame on the pupils themselves, their families, or the teachers, yet we seldom ask if the educational offering we're presenting to those children is out of keeping with their needs and the realities of their day-to-day lives. Behind the sensationalist headlines, we know the vast majority of educators enter the profession because they want the best for our children. We also know from research that children and young people have a wealth of remarkable talent and potential that we need to be able to tap into and support, and we know we can do so under the right conditions. The BSF and PCP programmes represent an opportunity to develop systems and spaces for the future that will enable us to do exactly that. We simply cannot afford to miss this opportunity to transform education.

Lord David Puttnam

Redesigning education: modelling transformation through co-design around BSF

Tim Rudd, Senior Researcher, Futurelab

Learning space redesign is about transformation

The policies are quite explicit. Both BSF and PCP are about educational transformation. Transformation in this case is not about merely building more practical spaces to enable us to execute current practices more effectively or efficiently. Transformation instead refers to marked changes in both appearance and character. Put simply, what occurs within those spaces needs to be transformed as much as the space itself. Transformation is not merely modification, tinkering with the shell, the interior or outdoor spaces. This would be a wasted opportunity both in terms of the level of investment and the potential to create new, improved and dynamic learning spaces that this once-in-a-generation programme offers. We can only really say transformation will have been achieved if we see marked changes in approaches to learning, teaching practices, relationships and school organisation; when we see a fundamental shift away from what might be described as schools as 'learned institutions' to the development of 'learning communities' where what is learnt, by whom, when, who with and how becomes more fluid, emergent and evolves based on need and opportunity.

There is no doubt that the first designs and constructions coming out of the BSF programme mean that school buildings are changing. They are visually different, based on new designs and constructed with different materials than their predecessors. But how fundamentally different are they really? The BSF programme has received criticism because the relationship between the quality and design of infrastructure has not been adequately linked to the wider issues around the quality and approach to learning and teaching that will occur (for example, House of Commons Select Committee report 2007). Since then there have been several moves to address this and we are beginning to see more innovative ideas and designs emerging. However, there is still a question mark as to the extent to which many new learning space designs are informed by a broader vision that reflects a wider educational transformation agenda clearly conveyed in the accompanying policy literature:

> "As well as being a project to improve radically the fabric of school buildings... it has been explicitly designed to transform the educational experiences of pupils."
> (House of Commons, Education and Skills Committee)

> "BSF is a programme of unprecedented scale and vision. Its ultimate goal is to transform education for every young person and teacher in the country."
> (Partnerships for Schools)

Joining up the big ideas?

The first waves of the BSF programme have occurred alongside other broader educational policies and initiatives that also call for the transformation of learning, teaching and the provision of children's services, and which should inform the design of the schools for the future.

Personalisation, for example, was introduced as a concept to help orientate our visions of a transformed educational future. Whilst there are varied interpretations of personalisation, the more theoretically informed ones all call for systemic transformation and present a

picture of an educational future centred around greater and meaningful choice and voice for learners in a system that is characterised by a more diverse, emergent, negotiated and learner-led set of learning and teaching practices. As leading theorists, commentators and politicians noted, personalised learning is based around an emergent and empowering change process, through which learners can gradually gain confidence to shape their own learning, create original content, and co-design their own learning pathways with educators.

> "Personalisation puts citizens at the heart of public services and enables them to have a say in the design and improvement of the organisations that serve them." (DfES, 2004, A National Conversation about Personalised Learning).

Surely, then, given the language of transformation that surrounds both personalisation and rebuilding and redesign programmes, there is a duty to ensure learners become active participants, through a process of co-design around the services that affect them and the buildings which they will inhabit. BSF and PCP are programmes devised to help deliver wider educational transformation and an education system. The Government has clearly stated that The Children's Plan and Every Child Matters are at the heart of the Primary Capital Programme. Every Child Matters states that "Children and young people will have far more say about issues that affect them as individuals and collectively"; whilst the Children's Plan similarly identifies that "Services need to be shaped by and responsive to children, young people and families, not designed around professional boundaries... [and that] ...the needs of families, children and young people [should be] at the centre of everything we do".

Given the need to offer learners more choice and voice and ensure they have a direct influence on the design of services that affect them, and now with an amendment to the Education and Skills Bill that makes it a duty for schools to consult pupils, are learners not a central and integral part of the design process? There are relatively few examples of truly empowering approaches to active participation for children and young people in the design of new learning spaces. There are, however, numerous examples of 'post hoc' involvement in aspects of decision making, but usually the parameters of this engagement are bounded, agendas set and controlled by others and they generally fail to support children in more innovative thinking beyond the institutionalised and cultural expectations of what a school is, does, or can be. We must move away from this culture of 'tick box' consultation that too often masquerades as 'learner voice' activity, as it will detract from the marvellous opportunities that are presented to offer new and dynamic learning experiences that can help raise self esteem, responsibility and engagement amongst learners. Both PCP and BSF offer great opportunities to place learners at the heart of educational process. The potential for schools to model transformative approaches, pedagogies and relationships by placing learners at the very heart of the design process, can assure the greater choice and voice that personalisation demands.

In short, BSF and PCP should not be perceived as 'building' programmes but rather as a huge learning opportunity for learners and teachers alike. An opportunity to give learners more choice and voice through the process of co-design and address one of the key issues of capital investment programmes to date, namely the lack of active learner participation and involvement. Redesign, therefore, should be seen as a process as much as an outcome,

within the wider educational transformation agenda with co-design offering the opportunity to model alternative educational approaches, to trial new ways of enabling learners to be actively involved, make decisions, organise their thoughts and arguments and take responsibility for key aspects of change to the services that affect them.

Learners' participation in co-design does not have to be seen as an additional activity. Their involvement in real, active and meaningful co-design activities can be mapped against existing learning requirements and broad curricula frameworks. Furthermore, it offers learners exposure to a range of learning opportunities and resources they may normally not have, and they will gain insights into how a range of other professionals operate. Active involvement in co-design processes can also enable learners to develop a range of skills and competencies relating to teamwork, project management, communication, collaboration, creativity, design, discussion, debating, presenting arguments, reflection, decision making and so forth, as well as a whole set of other abilities related to the various tools, mechanisms and resources that might be used in various aspects of visioning, planning, design and the delivery of new learning spaces.

Capital investment programmes therefore offer the opportunity to design new educational experiences; to involve learners as active co-designers in authentic and real activities; to give learners more voice and choice to influence their day-to-day experiences and the form and function of their learning places; they provide a platform for the redesign of curricula and the reimagining of learning pathways; and they offer all those involved exposure to and development of a whole new range of new skills and competencies. They are not only an opportunity to create new, dynamic, exciting, creative and innovative spaces which offer new learning opportunities, but should also be viewed as a catalyst through which to map and model transformative educational practice. Thinking about the process of involving learners in the design processes from the outset should, in fact, inform the initial vision and inform the design brief by characterising the sorts of practices and relationships that will occur within those spaces in the future.

Linking capital investment programmes and other major educational policies and visions through a process whereby future practice is modelled through meaningful co-design with learners, represents a unique opportunity to move towards the systemic educational transformation that is alluded to but seldom exemplified in practice.

It is easy to forget when we are talking about new buildings, new materials, new technologies and so forth, that the future can be, and often is, just an updated version of the present, where nothing changes significantly. The 'gloss of the new' is equated unproblematically as innovative or transformative but usually is little more than a means of increasing the efficiency of existing systems and processes or new ways of doing the same thing. There is a real danger that many of the projects arising from BSF and PCP will suffer this fate if the bigger picture is not realised and if we lack the courage to be more radical and innovative and move beyond our own entrenched institutionalised perceptions and expectations about what a school, or rather learning space, looks like, and more importantly, what happens inside. The school for the future could be a radically different, markedly changed and better context for learning altogether. Can we afford to miss such a well-funded, resourced and rare opportunity to deliver just that?

Transforming education – can we get there through BSF?

Nick Page, Development Manager, EdisonLearning UK

Most of us will still just about remember the new millennium and the excitement and celebrations that went with it. As a first-time dad, I remember thinking about what the world might be like in this new century for my 2 year-old daughter, Madeleine. We are now nearly at the end of the first decade of this millennium and whilst the debate around educational transformation continues to gather volume, have we really seen any real evidence that we are moving forward in designing and implementing a new education system? In the main we are still building 'new old schools', operating the same systems and processes that we, our parents and even our grandparents may have experienced. If transformation is to occur, the time has to be now, and we are the people who have to move beyond the debate to take action and bring about the necessary transformation.

The real challenge of the BSF strategy is to develop a new educational offer for children and young people that provides the services for meeting the Every Child Matters outcomes and is a conduit for much of the Children's Plan. It is in itself not the answer but it is the potential doorway and opportunity to reconsider the ways schools are run, their purpose, organisation and links to other facilities, services and provision.

The second iteration of the BSF programme, following the Pathfinder Wave 1 local authorities, is undeniably more focused and structured, and much of the learning from the earlier waves has been adopted, or at least recognised. This is encouraging, and visits to local authorities and schools going through the BSF programme reveals they are now recognising the broader educational transformation potential rather than engaging in merely a building programme.

However, whilst the building procurement has become more achievable, there still remains insufficient emphasis on the need to mobilise this once-in-a-generation capital investment in order to transform lives. The balance is still weighted toward construction rather than creating holistic and appropriate services for children and the wider community. The pedagogical underpinnings, the systems and processes, leadership and environmental designs required for an education system fit for the 21st century still receives inadequate attention. Fundamentally the investment has been targeted at capital build rather than revenue to change service and practice, meaning the process is still geared towards a building programme, and hence the current education system is unlikely to take significant steps toward integrated system-wide change.

Of more concern is that we are seeing in certain parts of the country that the young people we serve are increasingly rejecting what we in education have to offer. Worryingly, we are at risk of losing touch with increasing numbers of these young people. The TELLUS survey, research conducted by the Children's Commissioner, statistics on youth crime and weekly headlines of gang violence and associated tragedies may lead us to believe there is a pretty bleak outlook of 'tomorrow's world' for children and young people. Yet behind the hyperbole and headlines there is still much hope, expectation and excitement. At the end of the day, education is the one universal service that all children and young people can receive and it

is our purpose, our responsibility and, for some, their duty to make sure that the service they receive is the best it can be.

So we have in our midst the opportunity to transform educational provision over the next decades so that we can leave an ongoing legacy of a relevant, high quality, engaging and robust educational offer for all children and young people.

So how do we transform education through BSF?

Before anything else, be clear on where you stand today. All too often we feel the heat of the fire upon us too quickly and we rush to a solution. Planning and understanding of our current school system is key, at an individual, local and national scale.

Sir John Harvey Jones said:

> "Planning is an unnatural process, it is much more fun to do something... and the nicest thing about not planning is that failure comes as a complete surprise rather than being preceded by a period of worry and depression."

I work with schools who are challenged in a number of ways, all working flat out to support their students, families and local communities. The underlying linking issue for most is that they have never got to the point of really understanding and knowing their school, to a level where they can predict or act immediately to internal or external change. This is not about a regimented and controlled environment, this about having a plan B to Z for every eventuality and the capability and capacity to see through the plan. In education we call schools with plans and processes and systems resilient, sustainable institutions. They are the ones who can capture the right initiatives for themselves and scale them up to innovate by doing things differently. These are the schools that are ripe to move to the next stage through a secure and managed transition. However, most of the schools that are in the academy programme or BSF are not reliant enough for the whole-scale change that the two programmes should bring. The point here is that you can only begin to change education at school or local level once you have got forward momentum through having a complete understanding of your school context, systems and processes.

From my experience there needs to be a very targeted 'pre-change' process with at least a 12-month run-in before any consideration of structural changes. By cohering the strategies and organisations such as National Challenge, SSAT, Becta, TDA, NCSL and national strategies support within an improvement and change framework, then identified schools and local systems can move through the BSF or academy programme with some degree of security. Too many schools are at risk of suffering from the big bang type of change.

Another key area where a clear understanding is essential, is knowing what sort of service institution you want to change into. At the moment schools are experiencing the 'Tardis effect'. They take off on the BSF or academy flight path with no idea where they are going to land, and whether they are going to be perceptibly much better off from where they started.

Schools, local authorities and sponsors must have the time to research and develop new concepts before engaging with the process. In other words they must know and understand what they want before going forward. There is a huge body of research and ideas being developed to support 21st century education. When was the last time that teachers, students and their parents were enabled to analyse this research in depth, see developments in practice across the country and abroad, pick up, handle and look inside new systems and processes? Every project must grow a group of learning and teaching experts that understand pedagogical processes, how technology can be an enabling tool, how design can influence learning and vice versa, and who can then support the BSF building programme. Every project should have a link university who can help provide the research methodologies and support.

In Don Tapscott's latest book, 'Grown Up Digital', he identifies the Net Generation (those in our learning system now and recently graduated) and the Generation Next, those in foundation and early years phases. From his extensive research he identifies the key characteristics of these groups and the fact that only a few smart companies and governments are thinking to adapt their products and services to meet these new needs. He describes eight norms of the Net Generation: freedom, customisation, scrutiny, integrity, collaboration, entertainment, speed and innovation. Now if you compare these characteristics to the ailing car manufacturers in the US, the recent civil unrest in Greece, and our societal approach to decision making for young people, especially in education, then we may have a serious developing problem when we come to connecting with these future producers, consumers, shapers and leaders of the second half of the 21st century.

We need to enable the practitioners to move from the theory and bring it to reality through 'built pedagogy'. A few schools and local authorities have developed classrooms of the future, that model future learning environments. The best use new furniture, lighting, technology and learning approaches to understand what works, how it can be realised at whole-school scale and how students and professionals can colonise such space. This model testing can take place in City Learning Centres, in libraries, empty offices or spare classrooms. In themselves they can become hotbeds of innovative learning and teaching, adding to the improvement dynamic of existing schools. In other words they are worth doing anyway!

Finally, the stark truth is that transformation does not exist as any distinct point in time. Simply put, we won't know when we get there. Transforming education is a process of continual evolution contained in a complex system of flows and interactions where balance, agility, adaptability, skill, hope, values and resilient energy drive the flows and interactions. In many ways it is a complex ecosystem. What we can do is to begin to understand better, agree and cohere what factors influence progressive and impacting change, and how best to harness them in local contexts to enable further improvement and evolving change. That's the real challenge and meaning of BSF.

Madeleine leaves her primary school in July this year and moves to 'big school' in September. Sadly, I think we have run out of time for her and we should now be planning for her children - my grandchildren - to experience a transformed education offer. It's still worth doing!

The school in context: new models for learning

Professor Rosemary Luckin, Professor of Learner Centred Design, London Knowledge Lab, Institute of Education

The report on the Building Schools for the Future programme made by the House of Commons Select Committee raises a series of issues and challenges. This paper focuses on the need to specify what education in the 21st century should be like and, moreover, how new technologies can act as a driver for transformational change. This requires greater attention to the nature of personalisation and the processes through which all stakeholders can engage with the development of their own learning futures.

The current social context is one where we see a convergence of parallel developments in technology, education and design, which means increasingly people have the technological means to determine how they learn, where they learn and with whom they learn. Arguably, therefore, education will be based less around physical spaces such as formal institutions and more around the individual learner and the resources with which, and people with whom, he or she interacts. Education needs to prepare learners of all ages to be able to take advantage of the resources available to them: the people, the places, the information and the tools that can help them to learn.

Networks

The rapid development of new technologies has made it possible for people to access data and resources in their environment, to share information in multimedia formats, to collaborate, publish and track their lives beyond the constraints of physical space or temporal constraint.

The key challenge we now face is to develop ways in which learners can change the operational network of technologies, people, places and so forth into a conceptual network of understanding and knowledge creation.

Production

The current popularity amongst learners for the production and publication of their own material, if combined with open content and open source practices, offers the tools for increased educational democracy. These tools support the potential for the boundaries to be redrawn between learners and teachers, formal and informal education and also between producers and consumers of knowledge.

These developments demand new relationships in learning and teaching if we are to support learners in reaping the benefits of this potential. We need to scaffold the convergence of physical and digital resources through a process of personalisation to better account for the needs of the learner.

Democracy

In a world where technology develops quickly, often in response to user demand; where users appropriate technologies and use them in ways not originally envisaged by designers; and where open source development communities flourish, more people are able to influence

the way in which both technologies develop and how learning occurs. Moreover, through these emerging technologies more and more people are able to engage in debate about a whole range of issues, including the very nature of education. We are poised and need to consider how best to take advantage of the potential for both a participatory democracy and for technological and design reforms to enrich learners' educational experiences, making them more effective learners and participants in an educational reform agenda.

However, there is a particular tension around the extent to which formal educational institutions can cope with the more informal communicative approaches to digital interactions that new generations of learners possess. The questions that need to be addressed in order to tackle this tension are central to the BSF programme and also to the crucial educational transformation question of what we want education to be in the 21st century.

We want learners and teachers to be able to take full advantage of all the resources that can be available to support learning. This means that they need the skills and knowledge to construct conceptual coherence around their personal learning needs, taking advantage of the ways in which technology allows them to build relationships between their different environments, the people with whom they learn and the tools that they use to learn with.

We need teachers and mentors who can support learning beyond the school building without their jobs becoming impossibly time-consuming and intractable. Teachers have a vitally important role in the realisation of the transformative power of technology, but this role is continually evolving and teachers need support to operate effectively in a 'perpetual beta' world.

We need to open up the process through which knowledge is constructed and understanding is gained and facilitate the development of context-based models as the organising principle for designing learning. This requires us to embrace the idea that a learner's context is made up from the combination of interactions that a learner experiences across multiple physical spaces and times. The interactions that constitute each person's context are individual to that learner and represent their personal learning experience. As technologies increasingly underpin these interactions and enable the different spaces, times and resources with which a learner interacts to be linked together, they offer the opportunity for this personalisation of a learner's world to be transformed into the ultimate form of the personalisation of learning. A form of personalisation in which learners can take greater agency in the creation of their learning contexts through a constant series of adjustments to their dynamic environment. This offers the opportunity for moving beyond the generation of content for learning by learners to the generation of contexts for learning by learners.

However, the implications of this for policy and pedagogy are considerable. Institutions such as schools have a key place within this ecology of learning resources, but their importance is as much about how they enable learners to build links between their experiences outside the school as it is with the way that they support learning experiences within the school.
One way forward in tackling the challenges and requirements discussed here is through involving stakeholders in the design process around BSF and the strategy for change.

There must be more emphasis placed on the importance of a learner's wider context and the need for us to develop an education system that supports learners to construct knowledge and understanding from the multiplicity of interactions they experience across a wide range of places, people, information and tools. These experiences are situated in the wider environment in which learning is to take place. Every interaction of each learner is defined by its history and by the part it plays in this wider cultural, social, political and economic system. It is important to take these influences into account when designing learning experiences that are to be enriched through technology. Some of these influences can be encompassed through the use of participatory design approaches in which those who will be using the technology are themselves involved in its development.

The BSF design process could benefit from adopting a participatory design approach to the exploration of how learning interactions can be supported both within the bricks and mortar of the school buildings and beyond. In particular, the process needs to:

- identify the school as just one of the resources that learners will interact with, and to investigate how the school can be a key resource in fostering relationships with other resources in a learners' ecology, such as people and other learning locations
- explore how the school can be designed in a manner that enables it to continue to evolve
- encourage people to see the school as a dynamic entity ensuring that there are mechanisms in place through which stakeholders can participate in decisions about its continuing future development
- identify the roles that need to be fulfilled by people and technologies within and beyond the school building in order to support the school as a key resource in a learners' evolving ecology of learning resources.

What's learning got to do with it?

Bob Harrison, Education Adviser, Toshiba Information Systems (UK) Ltd
(Bob is also a school and college governor and an NCSL and Becta consultant)

"Brightest pupils less able than 30 years ago, research shows", screamed the headline in the Guardian in October 2008.

Professor Michael Shayer, Professor of Applied Psychology at King's College, London, tested 13 and 14 year-olds' ability to think 'analytically' and 'logically', applying a test first designed and used on the same number of pupils of the same age in 1976. He concluded that the research showed the children's responses had become quicker but lacked depth of thinking.

The research, published in the British Journal of Education Psychology, sheds some interesting light on learning and might be perceived to tell us something about the differences between learning past and present. But thought about differently, the findings may be telling us more about the ways young people access and process information through their experiences in school and also in the wider society. Perhaps it raises a number of questions about the relationship between digital technologies and learning which could have significant and profound effects on education in general and the Building Schools for the Future and Primary Capital Programmes in particular.

Some questions
Returning to the findings, we might also consider:

- Whether children are now learning in different ways to adults?
- Whether we can conclude anything about 'deep' or 'shallow' thinking/learning from a test devised 40 years ago?
- What 'deep' and 'shallow' learning look and feel like in the digital age?
- How the fast-paced, multi-sensory, multi-screen, partial attention world of digital technologies affects the ability to reflect and deepen learning?
- What this means for educators, educational institutions and the assessment system?
- How we might design buildings and school interiors, and how we can use technologies to support content creation, collaboration and active learning?

At the Institute for the Future of the Mind, Martin Westwell, Jonathon Sharples and Darvany Deal are hoping to shed some light on these issues with their research projects 'Young Minds: the effects of digital technologies on cognition' and 'The influence of virtual technologies on attention and cognitive control on young people'.

They argue that as digital technologies become increasingly pervasive - through mobile devices, instant messaging, social networks and instant access - the line between real and virtual lives is fading rapidly and key cognitive abilities such as creativity, attention, independence and imagination become influenced and affected by the ever-changing world of digital technologies.

Paul Howard-Jones, Senior Lecturer at Bristol University, in a recent Futurelab VISION article entitled 'Brainbox: neuroscience and learning', gives a critical appraisal of the advances in neuroscience and the implications for learning, and suggests we have a long way to go before we can really understand the link:

> "Whenever we found something about the brain, it's not very interesting educationally unless we understand its significance in terms of the mind."

Tomorrow's people

Baroness Susan Greenfield, in her book 'Tomorrow's People', suggests that the education system is in crisis as it struggles to respond to the changing ways in which people learn.

Whilst we clearly cannot jump to the conclusion that the whole system of education should change on the basis of these arguments, currently it is clear that we are not witnessing any significant departure in the way buildings are designed and learning is organised and approached. However, the changing nature of learning and interaction in society surely needs greater attention when thinking about the future of education and the learning spaces we may need to design to account for such changes. If we take the time to listen to young people, it is not difficult to understand the chasm that is emerging between the way many of them learn informally and the technologies they use to do so in their everyday lives, and how this compares to their experiences in classrooms and lecture theatres across the country.

Susan Greenfield's thesis is predicated on her expertise and experience in neuroscience and her views about the emergence of digital technologies:

> "The individualisation of the brain will increase as vast ranges of brain cell circuits configure in extent and power according to the particular type of input they have, that incessant and complex daily assault on the senses that makes up your daily existence."

She goes on to draw a distinction between "people of the book" and the younger "people of the screen", and alludes to the real digital divide between teachers and learners which could have profound effects on preparing young people for the next generation of learning they rightfully expect and increasingly demand.

These differences clearly illustrate that it is not what young people need or do not need to learn but rather how they think and interact with the world that needs to be considered in the design of new learning spaces.

This presents an enormous challenge to how the current system of 'schooling' is organised and delivered at every level, and has profound implications for the thinking and planning which underpins the world's largest educational building programme, Building Schools for the Future, and also the Primary Capital and LSC Capital programmes, with the unprecedented sums of public money being invested in buildings and technology.

As Greenfield suggests:

> "As education becomes an ongoing experience, and therefore less differentiated from everyday life, and as that experience is increasingly screen derived, perhaps not just the notion of 'learning' but even the traditional concepts of 'school' and 'university' will start to become meaningless."

Living and learning with new media and technology

This theme is developed further by the MacArthur Foundation report 'Living and Learning with New Media', a recent white paper that summarises the results of a three-year ethnographic study examining young people's participation in the new media ecology. Whilst the study illuminated a number of issues and implications for society in general, it was the emergence of self-directed and peer learning and the social and recreational use of new media as a site for learning that were seen as potentially having the most profound implications for the education system:

> "Participation in this networked world suggests new ways of thinking about the role of education. What would it mean to really exploit the potential of the learning opportunities available through online resources and networks?"

Mike Sharples of the Learning Sciences Research Institute at Nottingham University offered a similar view through his presentation at BETT 2008, entitled 'Disruptive Mobile Learning'. In it he contrasted learning in formal and informal contexts and suggested that mobile technologies could bridge that gap if teachers could be freed from some of the internal system constraints they currently have to work within.

So what are the relationships between learning and new technologies?

Professor Diana Laurillard, Chair of Digital Technologies at London Knowledge Lab, explored the role of digital technologies in achieving our educational ambitions in her inaugural lecture. In it she noted that the majority of learning theories emphasise the importance of the learner being the "active agent" in the learning process, but has the investment in ICT in the early waves of BSF taken this into consideration? The argument here is that the vast majority of investment is still focused on technologies for teaching and those that actually reinforce existing practices, rather than on the use of technologies for learning that places the learner in a more active role as content creator and broadcaster. There is an inherent danger that this trend will reinforce 'learning by attention' and pedagogical models not suited to collaboration, co-construction and more personalised learning.

Professor Laurillard points out that ambitious plans for personalisation are unaffordable without changes in both approaches to learning and teaching and the effective use of digital technologies. Chris Yapp, former Head of Public Sector Innovation at Microsoft, sums up this position in 'Personalising Learning in the 21st Century':

> "Learning has always been and always will be a personalised experience... it is the organisation of education, which has been impersonal... digital technologies make personalisation achievable at scale."

The arguments and issues above present those at the heart of the BSF, PCP and BCF projects with some challenging questions. Many of these echo those raised in the House of Commons Select Committee report on the early waves of BSF, which conclude that the opportunities for transformation have not yet been fulfilled and that we have so far failed to harness technology effectively to support the transformation of learning and teaching.

Key challenges

- What more do we need to know about the relationship between how people learn and the use of digital technologies to enable us to design, plan, prepare and construct learning environments which will enable learners to be prepared for 21st century life?
- What small steps can we currently take to use technology in a more innovative and creative way to develop synergy between formal and informal learning?
- How do we create a climate for the education workforce to innovate and be creative within a system which is "internally consistent and self sustaining"?
- How do we create the capacity for thinking within the complex and pressurised process of current redesign programmes?
- How do we ensure we spend the enormous investment wisely and that it will support learning transformation?

If we fail to come up with answers to such questions and find more innovative solutions we are unlikely to deliver the schools, or learning spaces, for the future and therefore may see a poor return on our investment and condemn this marvellous opportunity to failure.

About Futurelab

Futurelab is passionate about transforming the way people learn. Tapping into the huge potential offered by digital and other technologies, we are developing innovative learning resources and practices that support new approaches to education for the 21st century.

Working in partnership with industry, policy and practice, Futurelab:

- incubates new ideas, taking them from the lab to the classroom
- offers hard evidence and practical advice to support the design and use of innovative learning tools
- communicates the latest thinking and practice in educational ICT
- provides the space for experimentation and the exchange of ideas between the creative, technology and education sectors.

A not-for-profit organisation, Futurelab is committed to sharing the lessons learnt from our research and development in order to inform positive change to educational policy and practice.

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