

The Ideological Appropriation of Technology in Education: Symbolic Violence and the Selling and Buying of the Transformation Fallacy

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Introduction

The drive to embed technology into schools in recent years has been one of the most significant areas of investment in a shifting educational landscape, both nationally and internationally. In many countries, such substantial investment occurred within a period of perceived prosperity and was often uncritically promoted as the ‘technological fix’ within broader modernisation agendas, thereby creating new educational markets and diverting energy, resource and attention from wider and more fundamental structural and organisational issues.

In the UK, the ‘New’ Labour Government’s ‘third way’ politics represented a clear break from the traditional ‘left’ and the symbolic appropriation of new technologies conveyed a wider modernising intent. Their aim of embedding digital technologies¹ in schools between 1997 and 2010 led to substantial investment, supported by rhetoric heralding the transformation of education, a need to develop pupils 21st Century learning skills, and based on an imprudent assumption that somehow such action would automatically assure future economic prosperity (DfEE 1997). Yet despite the significant emphasis, resourcing, growth in interest, activity, and the emergence of various bodies and organisations seeking to promote and embed technology in schools, such bold claims amounted to little more than hyperbole and rhetoric. In this chapter I critically reflect on these policies and outcomes, arguing that not only did the UK government fail to transform education, the outcome and legacy was the accentuation of broader neo-liberal frameworks and principles, through the stimulation of an educational technology marketplace, and the embedding and transmission of ideologically informed assumptions about the nature and purpose of education.

Buying and selling the transformation fallacy

As has been noted elsewhere (see for example, Twinning 2002), the precise scale of the overall investment in educational technology in schools is difficult to state with precision. This is partly due to incomplete, unavailable or conflicting records and estimations, and the complexity of direct and indirect educational technology funding from different sources and the diversity of investment relating to various public and private national and local programmes and practices. Nonetheless, it can be confidently stated that investment in the UK has been significant and

¹ Over the specific period these tended to be referred to as either information technologies (IT), or information and communication technologies (ICT).

unprecedented. Selwyn (2008) for example, claims that between 1997 and 2007, over £5 billion of state funding, in various forms, was directed towards educational technology infrastructure. Year on year from 2001 onwards, schools saw significant increases in budgets for educational technology, with UK state schools recording an overall budget of £577 million per year in 2009 on products and services, excluding curriculum software and digital content costs (BESA 2010). Other figures show that the resourcing of new technology in secondary schools grew faster than any other part of the state sector, with expenditure reaching £1.05 billion in 2008-9, as programmes such as Building Schools for the Future and the Primary Capital Programme further increased the spending on educational technology resources (Kable 2008). There were numerous other associated funding streams such as the School Development Grants, National Digital Infrastructure Grant (£40 million) and the Home Access Grant (£194 million), alongside the funding of associated organisations, and the unknown, yet growing, expenditure undertaken by schools, local authorities and individuals investing in related private sector products and services.

Even against the backdrop of a global economic downturn, the main funding stream earmarked for schools between 2008-11, the *Harnessing Technology Grant*, was initially worth £693 million over three years, although this was subsequently cut by £100 million by the incoming coalition Government. A recent Forrester report (see Savvas 2011) suggests that the educational technology marketplace has witnessed a ‘perfect storm’, due to increased competition as Government’s seek gain a share of the global marketplace and with schools investing in order to both differentiate their ‘instructional offers’, and to improve their operational efficiencies. It further highlights that educational technology decision makers in education spend a greater percentage of their revenue (5.5% on average) than other industries (4.2% on average).

These are significant amounts of funding, and one would expect there to be a clear evidence base clearly identifying the impacts of educational technology, highlighting under what conditions such benefits occurred, and demonstrable evidence of concomitant systemic transformation. However, whilst the continued and relentless commitment to investment relayed a powerful message emphasising the transformational potential of educational technology, this appears to be at odds with the starker realities and broader systemic effects.

Educational technology as symbolic and ideological power

Vast expenditure and Governmental rhetoric alone, cannot adequately explain the clamour and subsequent adoption of new technologies in schools. In presenting a critical perspective that seeks to look beyond the rhetoric, it is essential to also consider the social construction of perceptions and the broader symbolic appropriation of technology in society and in the education system. In this sense the argument can be made that new technologies are often presented as a symbolic representation of progressive change, which can serve to mask underlying ideology, oversimplify cause and effect relationships, and may ultimately represent an advanced form of technological fetishism (Hand and Sandywell 2002). As a meditational tool developed and applied within broader social, cultural and political contexts, various symbolic meanings are attributed to educational technology, yet supporting rhetoric often presents technology as ahistorical and apolitical (Noble 1984). The incorporation of technology into

education is often presented and perceived as devoid of ideological intent, and largely portrayed as a necessary modernising and democratising tool. However, as knowledge and the instruments for its composition, are situated, constructed and mediated within the context and structures in which they appear (Leontev 1978), the representation, incorporation and use of technologies in schools are also prone to symbolic representation, and subject to prevailing influences of the context, wider fields and structures into which they are mobilised, classified, subsumed and recontextualised.

During their time in office, New Labour's political discourse, evocative of a 'new progressivism' (Giddens 2002) and reflecting a 'third way' politics, was supported by a powerful modernising rhetoric. Ultimately however, their education policies broadly retained the wider ideologically informed neo-liberal accountability frameworks imposed by previous 'new right' influenced Conservative Governments. In replicating broad neo-liberal frameworks (Stevenson 2011), and arguably intensifying the mechanisms for doing so, New Labour endorsed standardised curricula and assessment, rigid and externally imposed measurements, competition, selection, and the technocratic accountability of schools. The embedding, promotion and increased consumption of new technologies aligned with a broader political modernisation agenda, created a vision of a system in transition, and presented a veneer of transformation (Cuban 2001), yet existing market focussed approaches, limited the degree, type, ways, and ultimately the purpose for which technology was used in the classroom. The promotion, incorporation and institutionalisation of technology in a highly structured and recurrently patterned social set of arrangement and spaces, therefore was highly unlikely to bring about the proclaimed transformation without concomitant and significant changes to those broader structures, and the 'rules' regulating the system and generating practice (Bourdieu & Wacquant 1992).

Indeed, it may be argued that to some degree the structuring effects of structures (Bourdieu 1977; 1977a), or the effects systems and related processes have on individuals, are firstly internalised, and then subsequently externalised through language and practice and of actors within the field (Bourdieu 1988). Ultimately this serves to regulate and limit both real and perceived possibilities, opportunities and choices in relation to undertaking new and innovative action. The accompanying official discourse may be viewed as presenting a technoromantic and techno-determinist vision (Benyon & Mackay 1989 & 1993; Goodson & Mangan 1996), in overemphasising the transformative and benign effects of educational technology as an autonomous force, whilst simultaneously overlooking, or understating the significant structuring and mediating effects of neo liberal orientated system requirements. From this perspective, politically motivated claims regarding transformation were both fundamentally flawed and prone to failure, without wider and fundamental systemic changes.

'Edubusiness', ideology and the social construction of a 'logic of practice'

As well as endorsing market principles and related monitoring and control mechanisms, New Labour's tenure saw the extension of the privatisation agenda (Benn 2011), supporting the increasingly pervasive influence of 'Edubusiness' in the schools sector (Ball 2007). At the forefront of New Labour's educational technology policies were overt aims regarding the need to enhance economic competitiveness (Selwyn 2008 *op. cit.*) with the *de facto* assumption that providing industry with learners with appropriate technological and skills is one of the key

functions of education. In so doing, it may be argued that a further ideological shift, subverting the purpose of schools, and the primacy of educational technology within them, toward the needs of industry. The role of business and markets in education was consistently and uncritically presented as a positive force, yet the role this played in the social construction of educational technology tended to be largely overlooked.

This symbolic and ideological repositioning was further compounded through the stimulation of supply side markets, actively promoted and stimulated by Government, which served to create and drive demand by schools, thereby influencing patterns of educational technology product and service consumption. The underlying assumption in much of the accompanying rhetoric implied that the stimulation of an educational technology marketplace would automatically create the dynamism and innovation necessary to drive systemic transformation. However, such assumptions seem somewhat misplaced when the prime motive for private enterprise is to generate profit by providing viable and 'saleable' products resonating with the newly created 'needs' of 'consumers'. Ironically, many of the state stimulated and endorsed educational technology firms orientated themselves toward designing technology 'solutions' to enhance efficiencies in relation to existing structures and related performance and accountability frameworks, which often, perhaps inadvertently, served to reinforce perceptual barriers to more radical innovation, thus reducing the potential for system wide transformation. In other instances, existing products intended for sale in other sectors were quickly adapted for sale into the burgeoning schools marketplace with scant regard for pedagogy or broader cognitive or learning processes.

Given such bold state endorsement, the educational technology marketplace has understandably, continued to be proactive in selling technology to schools perpetuating the perception representative of 'the future', attempting to market products and services as a necessary pre-requisite for any forward thinking or progressive school. Yet, this is imbued with both conscious and subconscious messages regarding the nature of society and the role of education within it. Unproblematic visions of an educational future transformed by technology therefore, may not only misleading and based on presumption and conjecture, but can also mask underlying ideology that affects action and practice (Benyon and Mackay 1989). The ideological subtext is often subtly yet inextricably associated with global capital and benefits to capitalism (Waller 2007 *op. cit.*), however the myth of the neutrality of technology was perpetuated despite the design, use and application of technology being a product of historical, social, cultural and political contextualisation, and mediated through the fields into which it is supplied and applied and regulated by the dominant practices which occur within them. A further issue that needs critical reflection was the presumption that industry would automatically act magnanimously, unselfishly, and in an informed manner in assuring profits in a competitive marketplace. The reality is that educational landscape however, amongst the many worthy digital resources and related services, is still littered with inappropriate products, ineffective guidance, unsuitable content, and strewn with meaningless service agreements. The rhetoric of transformation perpetuated by Government, other agencies and bodies, and vehemently promoted by the educational technology industry seeking to capture new markets, may have contributed to the anxiety of local authorities, schools and teachers, fearful of being left behind by technologies promise in a high stakes and profoundly competitive schools marketplace.

Substantial investment and vested industry influence served to relay inculcating messages regarding transformational power of technology and manufactured a perceived need for school investment. Yet, arguably the reality was to create a 'hidden curriculum', governing not only what ought to be bought and taught, but also how and why this should be undertaken, thus ideologically influencing the prevailing 'logic of practice' (Bourdieu 1980).

Manufacturing consent: Financial investment and authoritative discourse

From the outset, numerous official publications pronounced New Labour's 'third way' commitment to 'modernising education for the next century' (DfEE 1997), which clearly prioritised a vision of education that was key to: "... *helping (our) businesses to compete and giving opportunities to all...*" (Tony Blair, *foreword*, DfEE *ibid.*), underlining a wider political persuasion to appease and actively involve industry in the process. The authoritative and symbolic nature of such discourse attempts on the one hand to portray educational technology developments as neutral, inevitable and beneficial for all, but on the other, foregrounds the influence of vested industry interests in policy formulation. In the same publication Blair stated:

"Last year, I asked Dennis Stevenson, chairman of Pearson, to conduct an independent investigation into the potential of information and communications technology in schools. His report identified two main problems – the need to train teachers and to create a market for high-quality British educational software" (*ibid.*).

It is perhaps unsurprising that an 'independent' report by the Chairman of one of the world's leading education publishing companies, might conclude that there was a need for Government to create and stimulate a market for educational software, - a market in which they subsequently became one of the largest suppliers of multi-media tools, testing programmes and a range of related digital learning content. Moreover, it was also stated that the investment in a National Grid for Learning would be a tool to address the 'problem' of growing the size of the market for software and that Government would: "... *give schools some 'seed corn' funding to buy those services... pioneering this market at home...to create markets for our companies abroad... We believe this strategy will be good for our children and our companies"* (*ibid.*)

The official justificatory discourse espoused the need to 'skill' pupils for the future, yet presented generalised claims based on broad assumptions and ill defined notions, lacking in detail with regard to the nature or purpose of such skills beyond the spurious *training* and vocational needs related to a projected economic future.

"Technology has revolutionised the way we work and is now set to transform education. Children cannot be effective in tomorrow's world if they are trained in yesterday's skills". (*ibid.*).

The underlying assumption here is that such skills, or rather some indistinct form of technological literacy, would be crucial for employability and that without such skills learners would be at a disadvantage in the employment market, thus symbolically inferring an ideologically informed view regarding the primacy of education and its subservience to the needs

of the economy. The authoritative tone presented in official discourse also tended to present both an over-simplified and biased view of the future that belied the implicit vagueness in detail, foregrounding technology skills, yet failing to account for the pace or potential of technological developments. The presumption that the technology used by children in school, and the purposes for which they use it in the school context, will have any direct or significant relationship to the digital tools used in a complex and diverse world of employment currently, let alone the future, is tentative at best. The underlying ideological intent of such proclamations may have been as much about creating general technological dispositions fostering consumption patterns and stimulating demand. In presenting such a view, an overly simplistic determinist argument was constructed that assigned an unwarranted degree of agency to the technology itself, made blind leaps of faith, and masked wider realities and ideology. Such determinist views, constructed within dominant discourse, seldom accentuated or foregrounded consideration regarding human or environmental welfare, or issues of equality, but tended instead to be imbued with implications derived from and promoting the maintenance of existing power relations (Apple 2004). Skills for the future, functional technology and digital literacy skills, as with technology itself, will constantly evolve, yet how they do so will continue to be shaped by the cultural, social and political contexts in which they are appropriated and through which they derive meaning. The transmission of values and emphasis on the importance of schooling to support national economic competitiveness, presents a flawed human capital argument (Blaug 1987), emphasising the surplus value potentially created in 'skilling up' or training learners for the economy, further embedding a hidden curriculum transmitting ideological values, serving to reinforce the role of schools as sites for cultural and social reproduction (Bourdieu & Passeron 1990).

Whilst it may be argued that even given the emphasis and investment in the promotion of educational technology by the Government, and the increasing influence of industry, the wealth of evidence and research in the field resoundingly justified expenditure and expansion. However, on critical reflection, it can be seen that the evidence base is far less convincing than the one perpetuated and not as compelling as might be perceived or expected. This too, perhaps, represents a process of social construction influenced and shaped by ideology and vested interests.

The social construction of evidence and the transformation fallacy

Official publications (see for example: DfES, 2003; Becta 2009) promoted the advancement of educational technology to schools, and numerous 'evidence informed' publications and related arguments were put forward suggesting that such investment would lead to learning gains and school improvement. Whilst it is not possible to conduct an in depth analysis here, even a cursory critical re-examination of some of the key Government and agencies own studies, reports and centrally funded and commissioned research, reveals that the evidence base for justifying investment was far from convincing.

One of the largest early UK studies, prior to New Labour's tenure, the Impact report (Watson 1993), concluded that computers could have a positive impact on learning but that findings were inconsistent and varied. Yet, the broader conclusion and interpretation in subsequent publications suggested that as teachers, pupils and schools became more familiar with

technology, greater positive impacts would automatically ensue. This not only downplayed structural limitations and changes in technology over time, but recontextualised findings in line with a broader political modernization agenda. Interestingly, the report's author later pointed out that too much emphasis was being placed on the "actuality of the new" in the field and that: "... *the rhetoric for change has been too associated with the symbolic function of technology in society...*" (Watson 2001, p.264).

The subsequent ImpaCT 2 study (Harrison *et al.* 2002) occurring after significant investment, was one of numerous projects commissioned by the Department for Education and Skills and managed by its adjunct British Educational Communications and Technology Agency (Becta), aimed at evaluating the progress of the Governments Information and Communications Technology (ICT) in Schools Programme. It was one of the most comprehensive investigations into the impact of digital technologies on educational attainment, involving 60 English schools. It concluded that educational technologies had: "...*shown to be positively associated with improvement in subject-based learning in several areas [and that its] contribution was statistically significant though not large*". Whilst this suggests there was evidence of impacts against formal subject and attainment areas, the findings may be interpreted in different ways. Again, the assumption was made that increasing familiarity over time would lead to greater learning impacts. Alternatively however, one could also question the extent of any benefits given the investment and emphasis, and moreover, whether any learning or impact gains would be sustained, increase, or become negligible over the longer term. The various types of technologies and precise ways in which they were utilised, certainly brings into question later uncritical Government proclamations about impacts, which tended to focus largely on the positive findings.

A further large Government project exploring the impacts of technology on learning, teaching, and school organisation was the ICT Test Bed project (Somekh *et al.* 2007). This £35 million Government funded project sought to 'saturate' 31 institutions (28 schools and 3 colleges) with new technologies and provide associated professional development. It was also supported by a discrete ICT Test Bed implementation team, as well as an independent external research team. Perhaps unsurprisingly, with an overall £1 million plus institution to expenditure ratio, the results suggested that technology had had a positive impact on attainment resulting in learning gains 'beyond expectation', although more so in primary than secondary, and not always consistently or comprehensively. Again, this evidence was used to inform future policy direction and justify both prior and future expenditure in subsequent promotional literature. However, there are some rather obvious issues that need taking into account. Firstly, the resource and expenditure was not replicable at the national level, nor transferable at school level, and therefore it might be reasonable to assume that attempts to do so would not yield the same reported impacts elsewhere. Furthermore, given the significant resourcing and intense professional development focus, it would have been more surprising if no impacts had been found. Moreover, it is quite plausible that similar, if not greater, impacts had arisen through other 'non technology' focussed interventions if funded to the same value.

Despite what was regularly presented in wider official Government publications and the promotional materials of vested interest groups and private providers, the broad and diverse findings relating to the educational benefits of technology remained relatively unclear and

clouded by complexity, as even alluded to by Becta itself in one of its reviews of the research publications.

“Over the last few years, independent studies have analysed the relationship between technology and learning outcomes for school-age learners. These have included interactive whiteboard evaluation studies in primary (Somekh et al 2007a) and secondary schools (Moss et al 2007), the ICT Test Bed evaluation (Somekh et al 2007b), and the 2002 Impact2 study (Harrison et al 2002). The relationship is not a simple one. Time taken to embed the use of technology, school-level planning and learners’ skills and models of learning are all important in mediating the impact of technology on outcomes” (Becta 2009:24).

This is in some contrast to proclamations made the previous year in *its Harnessing Technology, Next Generation Learning* (2008a) strategy, that were nothing short of a distortion of reality. Not only was it boldly stated that all learners need the chance to use technology to support their learning, it further exaggerated the impacts of its use to bring about greater productivity, prosperity, fulfilment, stronger communities and even a fairer society. The recent global economic downturn, subsequent political austerity measures, and record levels of youth unemployment, to name but a few unaccountable variables, should at least lead us to question how overstated such claims are and how they attribute unwarranted democratising power to technology. Such thinly veiled hyperbole, camouflaged by the use of spurious ‘evidence’ used out of context was commonplace. For example, questionable extrapolation of results based on an interaction between two (of many other overlooked) variables in research undertaken by the Institute of Fiscal Studies (Chowdry *et al.* 2009), was used on Government and Government agency websites and in other published materials, and subsequently quoted in various other presentations and speeches to the wider educational technology community by Government bodies and industry alike. The claim, presented as fact and devoid of contextual information, was that: *“Research shows pupils could improve by two grades at GCSE with a computer at home”*. (cited in Nutt 2010). This sort of cross promotion by official bodies overstating the presumed positive effects of using digital technologies was common practice.

“Ofsted recently commented on the benefits gained by learners through using ICT. It concluded that technology was contributing positively to the personal development and future economic well-being of pupils and students” (Becta 2009).

The commercial influence on Government policies was also particularly notable in the decision to heavily invest in interactive whiteboards (IWBs) and associated training, with initial funding on interactive whiteboard expansion programmes alone totalling £50 million (Hall & Higgins, 2005), with subsequent funds and resources being spent on associated training, consultancy and resources, and the stimulation of private industry in the marketplace. At the time of the ‘roll outs’ there was little clear evidence to suggest IWBs would lead to learning gains. Subsequent research undertaken after interactive whiteboards were placed into classrooms suggests the evidence is still far from overwhelming or consistent. It highlights that benefits are still mediated by numerous factors, including application, use, training, software, time and curriculum fit, pedagogical aims and practices, and so forth (see for example: Higgins *et al.* 2007; Rudd 2007; Moss *et al.* (*op. cit.*), and is often seen as supportive of current rather than transformational practice (Shakantula *et al.* 2010). Such broader findings again tended to be overlooked in favour of the less than prolific positive evidence.

Private interest in the field also not only emphasised positive impacts through promotional materials, but were also actively involved in commissioning and conducting ‘research’ to influence the schools market. Allied to this the burgeoning educational technology marketplace also created new opportunities for writers, researchers and a cadre of consultants to position themselves in a ‘profit and loss’ marketplace, convincing both policy makers and practitioners alike of the transformational power of technology (Nutt 2010).

The wider academic literature should also be considered in relation to the perpetuation of largely uncritical acceptance of the progress of new technologies in education. Whilst the majority of research is robust, accurate and interesting, much of it, understandably, focuses specifically on what is currently happening in the classroom setting with emphasis on individuals and schools rather than the broader social context and structures mediating the appropriation of technology. Many focus on pilot and intervention projects, new and emerging tools and resources and best practices, which may gravitate toward optimistic representations and possibilities rather than the more mundane realities of day to day practice (Selwyn 2011). A significant other body of research seeks to understand the effects of new technologies in relation to their impacts in relation to cognitive development and processing, learning technology mediated classroom experience, and the process of technology design and use. Whilst these are vital areas for research, the growth in interest in such areas has meant fewer critical and macro analyses have been undertaken.

Others have questioned the validity and robustness of the evidence regarding the impact of educational technologies, suggesting much evidence contains bias, and that positive findings are also overstated in subsequent reporting and presentation to wider audiences (see for example: Truncano 2005) and that vast expenditure has led to only negligible or unsustainable gains (Pflaum 2004). Moreover, it is not uncommon to hear claims of the broad, or potential impacts of digital technology, as if it were a singular entity rather than the diverse set of tools used in numerous ways, for various purposes. Furthermore, there is often a relative lack of detailed analysis regarding the specific affordances of technology and how it interacts with pedagogical and classroom practices to improve learning. Much of the evidence selectively recited by Government gave little real detail regarding the context or conditions under which any such impacts occur, or indeed why they occur, from a broader educational and pedagogical perspective.

As well as having to question why the less than convincing evidence regarding the relationship between the use of digital technology and benefits to learning and attainment scores; the inadvertent or benign effects elicited from the particular emphases of studies; particular tools and processes being studied; we must also consider the nature and intention of many of the evaluations. It may be argued that the larger Government funded research studies and reports, such as those outlined above, seeking to evaluate the impact of digital technologies in education were often actually *post hoc* evaluations of the Government’s prior expenditure and investment in the field. The influence of the funder, their vested interest in relation to their commitments to promoting technology and the aim of stimulating an educational technology marketplace, need to be thoroughly considered in relation to potential influence exerted in shaping the focus,

design, and more importantly, the subsequent reporting and re-presentation of findings through other mechanisms and media.

Whilst evidence of positive findings are often found and foregrounded, other evidence had a tendency to be somewhat overlooked. Evidence in the field reporting issues such as set up times, the impact of failing technology, ineffective teaching with technology, pupil distraction from task, downtime, cost of upgrades and refurbishment, and so forth, tend to be disregarded as issues that would be resolved over time. Moreover, claims regarding benefits tend to downplay the possibilities of interactions due to the numerous other variables that could come into play, the possibility that impacts are short term, or unsustainable due to cost and changing technology. They also surprisingly, given the scale of investment and the excitement technology can cause, tend to disregard whether results are actually the result of some sort of ‘Hawthorne Effect’ caused by specific investigation, or whether outcomes are due to increase in human and technological resources, or related clarity over learning aims as part of the project process. Moreover, in an educational landscape littered with numerous initiatives, policies and programmes, and with numerous individual and institutional factors and variables in operation simultaneously, it is hard to isolate the impacts on learning and attainment scores and attribute them solely to the use of technology within the educational context.

The broader literature focussing specifically on barriers to the ‘effective’ use of digital technology, identifies numerous real and perceived intrinsic and extrinsic barriers to ‘innovative’ practice in schools, occurring at both micro (teacher/classroom), and the meso (organisational/institutional) levels (see Becta 2004; Balanskat *et al.* 2006). However, macro level, or educational system level barriers also have to be accounted for in relation to the effective use of educational computing (Balanskat *ibid.*), and in mediating more innovative learning experiences that better harness the affordances of the technology for deeper, collaborative and creative modes of learning. For example, Shakantula *et al.* (*op. cit.*) drew on expert perspectives on technology use in European schools who identified that the use of digital technology in schools is not necessarily innovative and is often used as little more than ‘an up to date pen and pencil method’. They state that tools such as whiteboards are still dominated by frontal teaching methods, often failing to exploit the interactive potential fully into learning experiences and teaching strategies, thus negating potential for more collaborative and creative skills development. They further highlight however, the need to tackle educational innovation in a holistic manner, as changes in practice and curricula can be undermined if they are not matched by similar changes in imposed testing, targets, assessment, measurement and accountability requirements. In short, structural regulatory frameworks present system level obstacles to innovation, the development of broader skills and more engaging pedagogical practices, thus negating transformational possibilities. Similarly, prescriptive and content heavy curricula and rigid assessment methods emphasising knowledge acquisition and factual recollection, or perhaps regurgitation, results in compartmentalised and decontextualised learning and hierarchical relationships, with a pervasive ethos of control that promotes conformity rather than diversity that stifles creativity.

Balanskat *et al.* (*op. cit.*) undertook a meta level analysis based on evidence from 17 ‘impact’ studies and surveys carried out at national, European and international levels. They noted that

the rigid structure of the education systems impeded the effective integration of digital technologies into learning.

“Sometimes education systems work against ICT impact and even if educators are not ICT-resistant, in some cases the system under which they work is. For example, in UK, national tests are not made for ICT rich schools. Studies such as the Test Bed study give some valuable results concerning the factors that impede the effective use of investments in ICT. As it was shown in the study investments in ICT are not able to have an impact they should have in secondary schools within the present education system... For example, in the Impact2 study some teachers explain that very little use of ICT was made in Key Stage 3 English, because of the need to prepare for the public examinations... Indeed, existing assessment and evaluation methods primarily focus on content and neglect social and other abilities of learners. Competencies such as problem solving, presenting material in novel ways, collaboration or creativeness are only to a limited degree covered in national exams. Students receive no credit for these new competencies they have developed.” (pp. 52-3).

Across the research literature there is a wealth of often overlooked evidence that calls into question the systemic limitations that seriously reduce possibilities for transformation. Innovations, such as new technologies, are defined by and shaped by the context and conditions in which they are used. At a micro and meso level context, history, preferred pedagogical practice, and so forth, will all mediate how technology is integrated and used in learning and teaching. However, within the context of a rigid and highly structured field, any great degree of diversity and dynamism is likely to be severely mediated and refracted in line with underlying regulatory logic. Across a rigid, accountable and prescriptive system therefore, the tendency has been for new technologies to be appropriated to improve efficacy and effectiveness of the current system, rather than to transform, as alone new technologies lack the agency perversely often attributed to them in official discourse.

Educational technology, performativity and isomorphism

In the later stages of New Labour’s tenure, emphasis seemingly shifted toward addressing school and practitioner ‘weaknesses’ in relation to the use of technology, identifying individual and institutional factors mitigating effective use. In an attempt to gain more leverage and influence, and generate further interest and impact, the attention of Becta, the Department for Education and Skills, and a growing number of other agencies, organisations, and private companies shifted to the development of further frameworks and blueprints for effective or best practice. Various matrices, metrics, review frameworks, educational technology ‘marks’ and ‘accreditation’ routes were developed with the aim of fostering somewhat abstract ‘e-confident systems’, ‘e-mature schools’ and ‘e-confident teachers and learners’ (see for example Becta 2008, 2006; NCSL 2004; NAACE 2008).

This shift in strategic emphasis seemingly intensified the perceived need for investment and use of digital technologies in schools and further valorised and inflated the ‘currency’ of digital technology in the educational marketplace. Such tools identified ‘what good use of ICT’ looked like and provided various benchmarks and action plans for improvement. Vast resources were spent focussing on system efficacy, monitoring and performativity (Ball 2000; Lyotard 1979) measures as a means for raising standards and competition within existing frameworks, simultaneously identifying areas for infrastructural, content and practice development. In so

doing, greater emphasis was placed on to the role of teachers and institutions in taking subsequent action, resulting in further investment and demand, yet effectively serving to recontextualise technology as a tool for maintaining and increasing efficiencies within the system. As Fisher (2006) argues, whilst discourse surrounding educational technology espoused system wide transformation, the reality was often seeing “*the same thing done differently*” (p. 293), whilst Hammond *et al.* (2009) suggest that whilst there was a significant increase in resources and a whole range of innovations in policy and practice, the central control over the organisation of schools, curriculum and measurement mechanisms remained largely unchanged. Arguably, rather than promote the transformative practice consistently alluded to, the emphasis in a controlled marketised system resulted in significant ‘isomorphism’ (DiMaggio & Powell 1983), with schools imitating one another, or developing independently but under broadly similar conditions with set parameters and guidelines, thereby embedding technology in broadly similar ways. Broader frameworks set out (coercive) parameters, and official models of best practice and frameworks of so-called ‘e-maturity’ resulted in schools responding to uncertainty by imitating (mimetic) other institutions and organisational configurations in the belief this would be beneficial. Such beliefs also provided the orientation for significant normative isomorphism of the teaching profession, persuaded by the constructed and perceived need to incorporate new technologies into practice, and predicated on and regulated by formative systemic and organisation orientation.

Educational technology, ideology and symbolic power

The proliferation of new technologies in education triggered a concomitant burgeoning network of organisations, agencies, industries and interest groups that either by design, or by default, over-emphasised the impacts and importance of technology.

“...once a feeling or a mode of action has been embodied in the mythology of a large group of people it acquires and incalculable power”. (Tilyard 1962: in Hughes and Tight 1995:291)

Consistent Government messages, reinforced by vested interests in the technology industry and amongst wider groups and media, perpetuated a largely consensual discourse supporting the seemingly inexorable and largely positive influence of technology in society and education, whilst propagating specific projections regarding the future of learning, society, and the importance of economic competitiveness. Such discourse was persistently reiterated until it entered common parlance as taken for granted assumptions and gaining general acceptance. As Young (1984) asserts, whilst we should not look to create ‘anti-technology’ arguments *per se*, there is a much greater need to be more critical and highlight how technicist approaches become embedded in conventional ‘wisdom’.

“...perhaps the most effective means of ensuring public co-operation is the rapid institutionalisation of ‘computer literacy’ through the premature installation of new requirements for schooling and jobs, which literally forces the population to accept a new set of dubious realities”. (Noble 1984: 609)

Noble (*ibid.*) argued that a vocational and market ideologies surrounding computer literacy (such as those promoted and exacerbated under New Labour), which are linked to employability and economic competitiveness, are used to validate the imposition of I[C]T policies, virtually free from critical analysis. Others have long espoused the need for more critical analysis, as there is a

tendency that the ideology of computer literacy benefits vested industry interests but is presented as common sense and beneficial for all equally (Goodson and Mangan *op. cit.*; Goodson 1992). As Selwyn (1997) suggests, educational technologies may offer many potential educational advantages, yet they are often viewed with excessive optimism.

Uncritical arguments presented in relation to the future employability and the nature of the future of work and society offered a case for the expansion of digital technology in education based on the seeming plausibility derived from accordance with broadly one dominant vision of the future of productivity. Perhaps more importantly, in doing so, it also served to further subvert the perceived purpose of education to the needs of the economy and private accumulation. The progressive and transformational message surrounding new technology has been propagated and has become embedded in our cultural psyche, constructing educational technology as a necessity not only in terms of learning potential but also in relation to the skills needed by industry. Drawing on Noble's (1998) prior assertions, it may be argued that the heralded technological transformation has merely provided a 'disarming disguise' for the further commercialisation of education through the commodification of learning (Cuban *op. cit.*) and the stimulation and growing influence of the private sector producing marketable products for sale to help schools and pupils compete in a neo liberal framework of accountability, measurement and control.

Thus, we cannot ignore the role educational technology policies have played in serving to intensify schools as sites for social and cultural reproduction through the appropriation of neo liberal language, ideology, 'rules' and logic (Bourdieu 1993). In subverting further the purpose of education to the needs of capitalist accumulation and wealth generation through the creation of a marketplace producing commercially viable products to service, intensify and further reify existing frameworks and practices informed by human and intellectual capital inference and technicist delivery models, symbolic violence through pedagogic action has also occurred (Bourdieu & Passeron, 1990). The authoritative discourse within a framework of disciplinary power in a highly structured and regulated field increasingly influenced by market forces, resulted not in transformation, but an intensification and digitisation of existing practice through the construction of idealised forms of conduct and practice. The discourse and language of transformation and modernisation were subsumed within a regulatory neo liberal framework, which ultimately meant that the more innovative possibilities for technological support for learning were lost through incorporation into existing everyday practices normalised by the dominant logic operating and exerting control over the field of education (Foucault 1977).

In this sense, we must consider educational technology as playing a role in the inculcation in the dominant orthodoxy and hegemonic representation of world views and discourse, concealing alternatives and reproducing unequal power relations (Hoffman 2004). The neo-liberal consensus pervading language and structures in education, and in broader common-sense interpretations of the world (Harvey 2005; Bourdieu 1998a, 1998b), positioned and mediated the potential of new technologies predominantly as a 'techno-centric fix' (Kvasny 2006), or force for modernising a competitive system, serving to make more efficient existing modes of accumulation, whilst making unfounded claims suggesting improved access to technology would somehow lead to improved life chances and mobility for all. It was not meaningfully constructed

as a liberating force for learning, or as a tool to enhance broader social justice and equality, nor as a tool to challenge systemic and patterned dimensions of disadvantage and inequity.

Neo-liberal ‘newspeak’: the fallacy of transformation and perpetuation of hegemonic orthodoxy

The embedding and proliferation of technology in education was clearly located within New Labour’s ‘modernisation’ agenda, which justified its emphasis in relation to a seemingly inevitability and irreversible process of change, partly determined by a perceived unstoppable and unprecedented process of technological advancement. Presented as a *fait accompli*, it received far less critical attention, and furthermore, it drew on broader neo-liberal vocabulary and associated ‘newspeak’ (Wacquant & Bourdieu 2001) that has come to pervade our language, discourse and media, and which has diffused as a new ‘planetary vulgate’. Drawing on such a perspective, there is an emphasis in accompanying discourse around terms such as ‘globalization’, ‘flexibility’, ‘governance’, ‘employability’, and ‘new economy’, whilst terms such as ‘capitalism’, ‘class’, ‘exploitation’, ‘domination’, and ‘inequality’ are conspicuous by their relative absence, deemed largely irrelevant in political and public discourse. Moreover, this represents a new form of imperialism whose effects are even more powerful because it is not only directly promoted through partisans of the neo-liberal revolution whose intention, under the banner of modernisation and transformation, is to brush aside, “*the social and economic conquests of a century of social struggles*” (*ibid.* p.1) but is also perpetuated by the ‘cultural producers’, such as researchers, writers, practitioners, evangelists and activists, who may perhaps still perceive themselves as progressives or opposed to neo-liberal agendas. From this perspective, it represents a form of *symbolic violence* (Bourdieu 1990a) in that it relies on a relationship of constrained communication in order to de-historicise and universalise and create *misrecognition* (Bourdieu 1998), positioning individuals as responsible for their own position in the world, whilst masking the role of ideology and societal structures (Bourdieu *et al.* 2000) in the creation of *a priori* judgments. In this sense, the fallacy of educational transformation has been constructed and perpetuated as neutral process, yet has progressed through truncated dialogue serving to mask broader ideological bases and consequences, with those opposing or resisting its inexorable proliferation into education often perceived as luddites, anti-technology, laggards, resistant, unnecessarily sceptical or out of touch.

Despite how this may be read, given the interests and investment in the field, this is not an anti-technology argument. Rather it is one that offers a critical reflection of the wider macro conditions and ideological influences at play that have regulated and generated practice and action. Not only negated the potential for systemic transformation and more innovative learning and teaching but have served to structure and further embed unequal power relations within the education system. Understandably, educational technology offers great cause for optimism as it represents a set of potentially powerful tools that can assist and enrich learning and teaching in previously unimaginable ways, and the field offers many striking examples of innovative, creative, engaging, meaningful and collaborative learning facilitated by the affordances of technology. Yet perhaps the most striking and beneficial often appear on the margins, when technology is specifically applied to address particular or special educational needs, or where they occur outside or on the edges of accountability structures and systems of stringent measurement

and control. Whilst the design, appropriation and use of technology is not automatically political or ideological, the fields into which it is incorporated are, to a greater or lesser degree. The structuring effects of such highly prescriptive and unequal fields, systems and structures, which reflect the needs of particular interests over others, serve to imbue practice and use with an often unconscious set of actions that relay and reify broader political and ideological intent, propagating symbolic violence and reproducing underlying power relationships.

Because of the ideological orientation and inequalities inherent within the system, issues of equality, social justice and democracy are not of central concern but are peripheral, often 'add ons', after thoughts, or constructed around institutional or individual deficit models, based on truncated language or skewed evidence the masks broader principles and alternative ideals. Educational technology could be constructed differently, - as a liberating tool for equality, empowerment, social democracy and wider socially good purposes. Yet 'social good' is framed by hegemonic discourse in relation to economic competitiveness, accumulation, competition and mobility. Technology is unlikely to bring about systemic educational transformation within a system of unequal power relationships. Perhaps it has more transformational potential outside and on the margins of the restrictive confines of regulatory systems, through acts of resistance that challenge dominant orthodoxy and the tyranny of the market.

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