

Operating systems? An analysis of the structural relationship between the ICT industries and education

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Abstract

This essay explores the relationship between the IT industries and the education system with a view to understanding how the mix of private sector interests and public provision might influence one another in the future. It considers the issues involved in looking at the role of markets in education and theorises the relationships of IT industries between and across education sectors. It draws the shape and structure of the IT marketplace in education by looking at current trends. It then examines market drivers and looks at the implied teacher/lecturer, models of technological control versus aspirations for technological transformation, issues of supply and demand and tensions created by the relationship of capital versus revenue funding considering questions of market failure, key policy drivers and some of the issues relating to the differences between the development of open source and commercial growth. The final section explores questions for policy offering levers for change. These include evaluations of and responses to change models, the meaning of our interest in private and public relationships as a binary opposition, the role of the techno-elite and questions of market growth, failure, saturation and normalisation. A concluding section lays out possible directions for future scenarios focusing on the tensions between diversification and integration in the marketplace and an understanding of how this model impacts upon change within the education system.

Keywords: IT, industry, markets, education

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1. Introduction

The aim of this essay is to explore the relationship between the IT industries and the education system with a view to understanding how the mix of private sector interests and public provision might influence one another in the future. The IT industries here are understood to mean the full gamut of digital technology providers from national and global multinationals to one person businesses and teacher curriculum development. Included also are models of open source and open content digital technology production and the wider range of allied infrastructure and maintenance services associated with the development, usage and implementation of IT in Education. The same breadth of definition has been applied to the education system. Here it applies to the three main age-delimited arenas of institutionalised learning: statutory provision of school-aged children and young people, in practice, primary and secondary schools (pre-schooling has been considered but as will be seen in section 3 does not currently constitute a significant market); Further Education (FE) and workplace training; and higher education (HE). Although the essay touches on questions of edutainment and lifelong learning broader notions of education as learning (CERI 2008) are mainly considered here in the sense of state-supported institutional provision.

The essay is divided into five sections. Section 2 lays out the terrain and considers the issues involved in looking at the role of markets in state education. It theorises the relationships between and across education sectors and raises questions about values. Section 3 is more descriptive and draws the shape and structure of the IT marketplace in education. It looks at current and immediate (3 year) trends. Section 4 examines market drivers and looks at the implied teacher/lecturer models of technological control versus aspirations for technological transformation, issues of supply and demand, tensions created by the relationship of capital versus revenue funding, and considers questions of market failure, key policy drivers and some of the issues relating to the differences between the development of open source and commercial growth. Section 5 explores questions for policy offering four kinds of levers for change. These include evaluations of, and responses to, change models, the role of the techno-elite, and questions of market growth, failure and normalisation. A concluding section lays out possible directions for future scenarios

1.1 Method and Approach

This is obviously an enormous and challenging topic. Whilst the theoretical questions of political economy and some of the economic concepts are not original and grounded in academic enquiry, there is a paucity of current empirical and sociological research in this area. I have drawn on policy documents, 'grey' literature, and confidential market information. Interviews with key actors across the IT and education markets have been enormously helpful although some informants have asked for comments to be unattributed. There is often a problem of determining factual accounts of arenas where commercial interests often obscure financial matters. Some of the issues here are currently 'political', both in terms of ideology (in respect of the function of markets) and in relation to ongoing decisions - especially Building Schools of the Future, BSF, which at £45Bn. is crucial to a wide range of public expenditure issues, let alone the IT and education markets. The key challenge has been to draw on theory which will lay out structural relationships in a way that is productive for consideration of understanding futures. Here I have drawn on Monahan's (2005) US based study of the interrelationships between education system level, school, district, region and nation state as well as his focus on globalisation as a way of avoiding a polarity between private and public interests. Selwyn's (2008) delineation of different ways of theorising the technological and the social shaping of technological use has been helpful in thinking about technology and change - which on one level is what is at stake in this essay.

2. Key Themes

This introductory section aims to establish an understanding about the key frames with which we might approach this topic.

2.1 Markets and the Private Sector.

There is still considerable uncertainty about the role of the private sector in education. One of the most extensive analyses of the significance of the changing role of private sector interests by Stephen Ball describes markets as one component of a series of structural changes in the contemporary education system and explores them in concert with managerialism and performativity as tripartite levers in the process of structural reform as the whole state undergoes deep change (Ball, 2007). We shall return to this macro-social perspective in Section 5. Ball also draws attention to the questions of discourse and rhetoric and the ways in which a new language of description and understanding about profitability, impact and efficiency has entered debates about the public sector in general including a long-standing institution like that of education. Whilst the state does not directly manufacture or provide IT (excepting how employees in schools and universities might create software or teaching materials), private companies are going to have a role in education but the extent to which marketisation remains an optimum or necessary process for this, is, as Ball would contend, significantly a question of definition, given how the language of privatisation has percolated into how we now frame state services and responsibilities.

There are ways in which, because of the state, education does not function as a pure market and although there are a number of distributed actors (eg schools, teachers, etc) state money drives the process as does national policy. Questions about who creates demand are key here, as is how the state functions in respect of its protective, permissive and regulatory role. Similarly, profit is clearly not the only motive for private interests, given the low margins in some cases; and notions of public good come into the equation.

On the whole concern about the transparency of market operations, the role and purpose of the profit motive and the possible conflicts between competing definitions of 'educational good,' even what constitutes meaningful and valid learning, are at the heart of discussion about the role of private companies in the IT education marketplace.

An important exemplar of these tensions is the role and purpose of the British Education Communication, Technology Agency (BECTA) within the idea of an IT education marketplace. Is BECTA a regulator (in the conventional sense) given that it has a remit to accredit suppliers as part of its role? On the other hand, it also has a key advocacy 'cheerleading' function and additionally produces the evidence base on which a wide range of policy is developed and implemented. BECTA is also, as we shall see in Section 3, a hidden cost in the market, given that its c£37M pa expenditure is both part of the IT market but also not. Whether and in what ways BECTA has a future is indicative of the nature of what is meant by private and public interests working in IT in the education system.

2.2 Technology, Education and Learning.

Although the focus on this review is on the political economy of IT and education, the purpose of the essay is to speculate on the ways the IT market might influence (or be influenced by) the future education system and we thus need to consider at least some broad principles of the technology itself. In essence there seem to be two kinds of roles ascribed to IT, both with discrete but important rhetorical effects. The first suggests that the fundamental role of digital technologies is to afford standardisation and massification across large datasets. It suggests that the manipulation of information about pupils (and their learning), schools, local authorities and the state is a question of integrating common technical standards. From that perspective, economies of scale offer unprecedented levels of integrated bureaucratic control. This 'governmental' function is

thus the logic of large scale investment in digital technologies in the education system. On the other hand, there is a long history of activist inventiveness which stresses how digital technologies offer opportunities for individual progression and this approach with its attention to 'learning' stresses the 'transformative' (empowering) effect of IT in Education. Here the goal of individualised (personalised) learning routes is made possible through technological affordances (Green, Facer, Rudd, Dillon and Humphreys, 2006). In practice, real world change combines both of these perspectives and neither model could be said to exist in isolation in any meaningful degree, however much we can see glimpses of both approaches in current developments. More pertinently here, each trend is itself complicit in a different business model and needs different kinds of actors – the transformative model, to date, has relied on a cadre of teacher software developers, the governmental approach on Whitehall centralisation. We shall return to these distinctions as we see how the IT market works in practice but the interrelationship of social actors driving each model underpins the future scenarios in Section 6.

2.3 Patterns, Market Trends and Education Sectors

The brief for this essay is to examine the education system as a whole. In practice there appear to be three main and distinct sub-sectors in relation to ICT – though who is the constituent of whose market (education or IT) it is difficult to say. Statutory requirements to educate mean that schools (incorporating pre, special and all modes of school governance) constitute one type of market. Split in market terms between primary and secondary, schools may work in clusters and/or in concert with local authority control but are obliged to follow a range of centrally determined procedures. This leads to a strange economically irrational mix of fragmentation in the market (each school controls its own budget) coupled with conformity. The workforce is, of course, small in each institution, reducing opportunities for school based innovation and development. By contrast the higher education market is characterised by fewer larger institutions, many of which have a highly skilled IT workforce. Additionally universities contract directly with learners and have a curriculum and assessment authority. This is not the case with schools: Gene Glass quotes Kenneth Boudling's work from 1972 arguing that of course parents (and other adult tax payers) are only the proxy consumers of schooling (Glass, 2008, pp148-9). These differences in market models are important because many people suggest that there is trickle-down effect, that what happens in higher education will happen in schools. (A good example here might be the development of modular, pay at point of assessment courses explored by the European Association of Distance Teaching Universities¹). This assumption, that the two markets follow similar principles, is problematic and indeed we need to consider how scaling and mainstreaming work in both sectors. The role of an avant garde workforce is important here: see 4.2 below. It has also been suggested that as forms of behaviour (for example how to work independently) inculcated by schooling are brought into HE as students go through life, that that there is equally a trickle-up effect.

Whilst FE colleges are, in institutional terms, operationally distinct they follow features of both the schools and higher education marketplace. The skills, employability and work-training sector may be delivered locally but is very much led by Central government policy (see Section 3 below).

2.4 Values, Ethics and Public Interest

At stake in much of the discussion around the role of private companies in the education marketplace are a deeply contested series of values. Claims for increasing efficiency are offset by concerns about loss of personal contact and attention. On the other hand, personalised learning and data management is set against standardisation. Older concerns about the role of humans within technological futures (as seen in debates about the merits of e-assessments vs professional judgement) mix with anxiety of the purpose of profit as a mechanism for improving standards. There are additionally

¹ An example of this approach can be seen here:
<http://labspace.open.ac.uk/course/view.php?id=4341>

concerns about the integrity of the market. Are there monopoly providers (or at least forms of oligopolistic control), proper and due regulation or is the State a clumsy and ill equipped player here? Frequently expressed concerns about a 'Microsoft' monopoly are countered with 'realistic' arguments that this is the environment that young people will need to know as they go through life. What notions of public good underpin commercial enterprise and how is this different or the same as broader debates about public broadcasting or even shared culture and the Arts? These are not questions to which there are answers but they thread our discussion here in explicitly political ways. Managing public assent over values is a key part of what it means to develop technology futures in education and are crucial to the checks and balances that underpin the mechanisms of entry and opportunity for IT companies in the education marketplace.

3. The Shape and Structure of the IT Education Market

It is actually difficult to describe the IT education market. There is no consistent overview because the field of IT is so much part of other ways of describing the education sector. This lack of oversight may contribute to anxieties about the perceived role of the private sector. Additionally IT is, of course, only part of other private sector involvement in education. This section, drawing mainly on reports produced by industry intelligence (The Assignment Report², Kable³, BESA⁴) and verified by informants, offers an attempt to capture the breakdown of sub-markets and current trends.

3.1 The Structure of the IT Market

Current estimates place the value of IT in Education as worth around £2.5bn pa with roughly 45% being spent on Schools, 16% on FE and the rest on HE. Some companies estimate the Schools market is worth around £1bn and roughly breaks down into around 80% expenditure on hardware (including PCs, networking, peripherals, etc) and between 5-7% on what might be called learning software with the remaining 13-15% spent on data management (from pupil tracking to integrated services to payroll type costs). Even this breakdown is difficult to calculate in that in some instances staff costs (technicians, etc) are included in some budgets but not others. The BSF effect (in which IT plays a significant role as part of the BSF offer) is a current bias in the market. A recent report by Kable calculates hardware as around 31% of expenditure, Services at 21%, all types of software as 10%, in-house ICT staff at 30% and the remainder on communications.

The share of these categories vary across schools, FE and HE, with HE and FE spending as much on in-house IT staff as on equipment. In fact figures for HE actually almost show the inverse of the school model, spending twice as much on in-house IT staff as on equipment, whilst schools spend around two thirds on equipment as on in-house staff but proportionally more on outsourced services. The proportion on software spend is slightly higher in schools than in FE and HE but this doesn't offer an analysis of software use or penetration especially where software may have been produced in-house in the FE or HE sectors.

The margins for each area are different and changing with the selling of equipment coming down in cost (and profitability) and many companies predict that services will offer the greatest returns in the next few years (between 10-20%). The balance of complete software packages and other software types across sub-sectors is again skewed with schools purchasing more of the former than the latter.

Other kinds of IT expenditure by local authorities or at government level are probably excluded from these cost analyses.

² <http://www.theassignmentreport.com/>

³ http://www.kable.co.uk/kabledirect/index.php?option=com_contentandmCCountryOrgID=410andtask=viewandid=1229495

⁴ <http://www.besa.org.uk/besa/documents/view.jsp?item=1118>

As already mentioned, procedures for the commissioning, procurement, and negotiation of expenditure and development varies across educational sectors and within market sub-sectors. For example around 70% of schools act as individual actors in the marketplace by developing direct relationships with suppliers. Expectations about post-purchasing support vary. Companies like Espresso⁵ are developing ongoing relationships with staff, supported by licensing and usage costs as opposed to up-front one-off purchase costs.

3.2 Current Market Trends

One often repeated observation is that this is not a big market: once BSF is removed from the equation and given the decreasing margins on re-selling hardware, it becomes even smaller. Each part of the market has its own distinctive competition model. For example, there are nearly 800 creators of school education software (chasing a market of between £50-80M). In the managed services area a quite 'pally' group of half a dozen companies regularly competes. As Ball's (2007) study noted, often the personnel working in these companies know each other and constitute a distinct cadre, formed as a result of their earlier, common experience working in public service.

Company size is an issue. There are signs of forms of horizontal and vertical integration with large global publishers. Pearson is most often used as an exemplar owning the examination group EdeXcel and using its dominance to contract suppliers to produce curriculum materials and possibly develop forms of e-assessment. Here it is suggested the small scale of the English education market is of interest to larger companies because of the reputational value such participation offers and how the English product can act as leverage in a global marketplace. Additionally, it is often suggested that global multinationals are interested in establishing patterns of uses for young 'consumers' to learn as they grow older, both in the general sense (using Microsoft desktop software) and in specialist cases with the use of propriety- database software in high end University courses being the most often quoted types of examples. Equally tie-ins with other kinds of publishing and edutainment (estimated some years ago at around £350M (Buckingham and Scanlon, 2002) may be long term commercial drivers. Similarly, larger integrated services companies (eg Logica, Tribal, Capita etc.) may be interested in education because of synergies with their work across Government in general (above and beyond their commitment to the current market). Logica's portfolio of interest, for example, includes The Medical Research Council, Home Office, DWP, MoD, HMRC, etc. These kinds of integration offer economies of scale and experience and additionally align with a wider political concern to integrate government services.

As the market developed selected forms of market share were often disrupted over a 5 year period, by small companies exploiting niche opportunities in respect of curriculum initiatives or changing policy trends (for example, Rising Stars⁶ is an example cited by many informants at the current time). Whilst short term interest (3 years) lies in meeting policy demands (for example, in respect of Every Child Matters, Real Time Reporting, Home Access, Train to Gain, etc), it seems as if the mix of global multinational, medium and small size companies were well positioned to meet these demands. However, the tendency towards vertical and horizontal integration (again the range of fields in which Pearson operates were most often cited as examples here), may suggest a future with fewer larger companies operating across hitherto discrete sub-markets. As the lead national 'education specialist', RM's acquisition and diversification strategy was also cited as an example of this process. This directly raises the question of how policy and central government drive the market or whether it is the market itself that creates conditions for such growth.

⁵ <http://www.espresso.co.uk/services/primary/features.html>

⁶ <http://www.risingstars-uk.com/>

4. Market Drivers

This section considers a range of determinants on the IT education market. Some drivers are internally produced, that is, they are a consequence of present arrangements; others are external to the market and relate to broader macro-social issues.

4.1 The Role of Policy

A number of informants noted the power and importance of central policy in defining growth and opportunity in the marketplace. Although there are groupings of suppliers, raising questions about cartels, oligopolies and, as is the case about the kind of examination board/publisher tie in, monopolies, it might be more provocative to think about the monopsony power wielded by the government as an even bigger driver of unequal and unfair markets at a macro level. Suppliers talk about meeting need and centrally determined objectives and although central government does not act as a single purchaser any more, essentially they argue that policy creates the need and delegated financial arrangements then create (more or less) competitive markets.

Policies to put computers in schools, students on databases, integrated management systems and so on is thus the main engine for growth and it could be argued that the current structure of the IT in Education market has emerged to fit those ends. Some critics of contemporary education systems have suggested that, in effect, the state has been manipulated by private interests to disburse money in this way and on these types of products (eg Berliner and Biddle, 1999; Glass, 2008). Ball's (2007) analysis of the English education system suggests more of a paradigm change than a conspiracy account of these matters but as suggested in 2.4 above, these kinds of politico-ethical questions will always return to haunt debate.

4.2 Supply and Demand

Some of the issues relate to the deeper question of need in the first place. Scholars like Larry Cuban who have analysed the introduction of computers in school have pointed to the complex and not always productive way in which new technologies have been incorporated into dominant ways of teaching and learning (Cuban, 1986). This is the main finding of the Interactive Whiteboard initiative⁷, that IWBs have been successful precisely because when analysed over time, they do support dominant whole-class teaching methods. In some respects this process of incorporation has been frustrating to policy makers, who, as Neil Selwyn has shown, are concerned with the rhetoric of modernising and the future-oriented nature of IT as much as being persuaded by accounts of innovative practice (Selwyn, 2007). Furthermore, the 'mandatory' nature of much policy – however mediated through a kind of pseudo-autonomy in the marketplace – results in institutions effectively buying what it has been suggested they need.

Policy makers would always point to their stimulus-making function; that they need to drive change and alter the possibilities for local actors. Economists might question how much this is an exploitation of monopsony power or a way of redressing market failure. As Monahan (2005) shows so well, all levels of the market learn to use the same language of aspirations which is how policy creates demand.

In terms of supply and demand, then, analysis of policy sits between a 'false needs' and a transformative future-oriented approach. Either way, policy is of course dependent on politics but this perspective does point to how debate and study of IT in Education has been more supply-side focused than demand-side inspired. We shall return to demand-side issues as we look at the workforce, and in Section 5, consider the limits of the current policy-driven model of IT development.

4.3 The Implied Teacher

A common way of talking about need by all parties in the market is to offer hypothetical models of what teachers want. By definition larger companies stress products which offer

⁷ http://partners.becta.org.uk/page_documents/research/wtrs_whiteboards.pdf

convenience, simplicity, and government issues of standardisation, indeed the underwriting of standards. The HE sector has a greater sense of scholarly autonomy and thus emphasises ways of facilitating different kinds of pedagogic relationships, including online support and tutoring and even, as one respondent speculated, a move away from knowledge production towards a coaching role. In this model the HE workforce would stratify with specialised 'teaching' staff focusing on supporting students, online resources and developing student performance rather than purely developing disciplinary research. Similar far reaching aspirations have been raised at school level with examples of entrepreneurial teachers developing online materials in a number of schools and trying to find ways to exploit resources both in the UK and in an international marketplace⁸.

The developer-teacher, the coach, and the deficit in-need-of-support wanting convenience, paradigms all inform speculation about who drives the market.

4.3.1

In the Training/Skills sub-sector of the marketplace, there is an attention to producing complete tutorial packages with online and distance learning support. This is shared with some innovations in HE which builds the teacher role into the pedagogic structure of the software completely. Here the implied teacher is removed from the teaching institution and it is not surprising that such delivery models are more common amongst third sector and other franchised providers. The discourse talks of the 'delivery of education' as if learning has been reified and exists in commodity form which, in theory, can be purchased and used in any context. Like speculation about changing coaching roles, it is unclear whether this paradigm has any trickle-down effect: see section 2.3 above and 5.2 below.

4.4 Capital and Revenue Expenditure

At present government budgets on a 3 year cycle and of course is to a great extent is determined by the 5 year election period. IT money is paid as forms of capital expenditure. Within BSF (a classic capital programme), revenue costs like IT staff are included as part of the initial investment. Part of the argument here is that such revenue costs will become normalised by institutions which will realise that they need such staff as part of their establishment (see the balance of kit, staff and software between education sectors as described in 3.1 above)⁹. As we have seen, this may be the case in larger HE institutions but is not the case in schools. How and in what ways managed services and a local authority role create clusters of expertise and how such investment can be exploited are, in practical terms, crucial to future developments. Working as a part of capital expenditure establishes a certain kind of market behaviour, encourages time-limited effects, and possibly displaces deep questions about sustainable change.

4.5 Open vs. Commercial Business Models

This question of sustainability will be explored from a different perspective in 5. 1 below, but it is also part of the debates surrounding discussion about open source and commercial business models. A number of commentators additionally conceptualise the question of open source as a business model with their imagining of the workforce. The work of Diana Laurillard has been influential in proselytizing for a teacher workforce which works as an open source community and generates curriculum innovation through such mechanisms: see also Hargreaves (2003).

In practice, companies are almost disinterested in this question. Many companies see a value of added services wrapping open source or open content in support services and some respondents suggested that private sector disciplines might well be a productive

⁸ See for example: <http://www.ttsonline.net/>

⁹ Commentators were intrigued by the Espresso <<http://www.espresso.co.uk/>> business model here which has been successful in Primary schools and exploits the issue of IT staff expertise (or lack of) through a licensing model. Its success was contrasted with the front loaded capital model of software like Pearson's knowledge box.

way of developing some open content material in the future. Key to any questions about the viability and distinctiveness of open vs commercial business models is that of a trained labour force as it remains a key assumption that we are still some way off from transparent, always work-able, technologies and nobody seemed to envisage that equilibrium point in any vision of the future.

Whilst there are many off-the-shelf packages to support the authoring of open content (eg Moodle), and considerable excitement and interest in the development of open content materials, with genuine market share claims from some HE practice and interesting opportunities with some teachers, working as entrepreneurs selling (or sharing) materials at home and abroad, research is needed to quantify the effect of this segment of the market and to compare and contrast it with more dominant business models. Questions about this balance are raised in 5.1 below.

5. Policy Levers

This section considers issues in policy thinking which may drive how the market develops in the future. I have tried to focus on the areas within each 'lever' that offer grounds for change as well as considering whether such thinking is solely determined by its own 'logic' or political direction in preparation for the scenario thinking which concludes this essay.

5.1 Innovation, Norms and Rumps

As is often noted, discussion about IT in Education possesses huge symbolic weight and is crucial to the imagining of system change: see, for example, Buckingham (2007). How the IT market functions is thus central to these aspirations for change. However, as a wide number of sources including BECTA note, the percentage of schools demonstrating high quality innovative practice using IT in Education, and the quality of the teacher workforce developing and innovating, is actually small, around 5%. This is not a distilled meta-review calculation but an informed feel for the rate of innovation on the ground. It has significant implications for claims about the type and depth of change that could be said to be led by IT reforms.

At the same time as Government is interested in raising common standards, a sense of what might be considered normal or average continually returns to the challenge of reforming the rump of practice. Aspirations for scaling up innovation often form the mechanisms designed to bring about such changes. On the whole the English education policy supports a market-driven form of innovation as opposed to state-led practices. For example the Scottish programme, Glow¹⁰, attempts to set a Virtual Learning Environment (VLE) common standard. To date, English change models have steered always from this kind of leadership, perhaps mindful of the inherent problems of obsolescence as exemplified by the London based project, Digital Brain¹¹. Although it should also be noted that built-in obsolescence or the need to continuously upgrade, are perhaps part of many IT products and built into IT companies' business models: see 4.4 above in relation to questions of capital expenditure. The question remains however as to what kinds of change models will be most espoused by the market, given that it is not motivated by the same issues of educational reform as policy – or, and in what sense, policy needs to make demands on the market to achieve its aims.

These questions are partly political and partly an issue of workforce, governance and economic logic.

5.2 The Techno-elite: decision making and governance

Mindful of concerns about the ways that debate about IT is implicated in assumptions about forms of determinism (Williams, 2003; Marvin, 1990), I have tried to draw

¹⁰ <http://www.ltscotland.org.uk/glowscotland/about/Whatisglow.asp>

¹¹ <http://www.dbeducation.co.uk/home>

attention to the role of teachers and other IT professionals, the key social actors who make change happen, throughout this essay. As already noted, the cadre of IT in Education professionals has often been forged in public service and shares common values. This will change. Expectations that as new teachers come into the workforce that they will, by virtue of their generational competence, possess deeper and better understanding of IT is unproven and is redolent of assumptions about digital natives critiqued by Buckingham in other contexts (Buckingham, 2007).

Not only then are questions about implementing IT changes dependent on this (unknown) workforce but purchasing choice and questions of governance (especially about the ethical issues involved in surveillance technologies) are potentially left hanging. This is also a key question for directions in market growth. Proponents of Open Source and those who espouse the driver of in-house IT-led innovation rest such assumptions on models of workforce investment. Even questions about how those with responsibility for purchasing IT can make informed choices and in whose interests, especially as noted in 4.3 above, needs analysis in relation to assumptions about colleagues.

5.3 Market Integration

Over time, it now seems clear that the IT education market behaves in a certain way and to an extent is enjoying a period of relative stability (although this may be a BSF effect). As noted above in Section 3, margins may be decreasing and the rate of growth of new sub-markets much slower than in previous years. A number of informants have suggested that this stabilisation will necessarily lead to forms of integration with larger companies emerging across hitherto discrete sub-markets. The way that RM (the largest English specialist education company) has changed its business model¹² reflects this process of incorporation although, to date, there have not been tie-ups with the publishing side of the market - even though that sub-sector demonstrates its own mode of integration with curriculum and assessment. It has also been noted that here, the centralisation of the curriculum supports better returns on investment in the production of high quality teaching materials over a reasonable time period and thus establish the conditions for higher capital investment, only made possible through forms of market integration¹³.

The increasing trend of UK companies to acquire foreign partners enhances the integration process (see also section 3.2). There are a number of points within the procurement and consultancy process where greater transparency has been urged and where an agency like BECTA has almost taken on an anti-competitive regulatory role (in respect of Microsoft licensing, for example). In other words the logic of market exhibits a tendency towards forms of oligopolic and even monopolistic control. A key argument for the role of the private sector in education is precisely the opposite: that it undoes the state's tendency to uniformity of provision¹⁴. If the economic logic unfolds as I have suggested then questions of political legitimacy for these arrangements will be asked and equally importantly, evaluations of where the market is producing the desired kind of educational reform will also need to be answered.

6. Future Scenarios

This section draws together the internal and external logics to the IT in Education marketplace to draw attention to the kinds of interventions which could change direction for the processes analysed above.

¹² See RM report to shareholders September 2008

¹³ Counter arguments which suggest that that lower barriers to entry in publishing might encourage more smaller-sized competitors often do not allow for the cost of copyright material and other IP assets. Legal protection would have to change for such assets to become affordable to other than large companies.

¹⁴ Selwyn, (2007: 228), quotes DfEE arguments to this end in respect of 'market failure'.

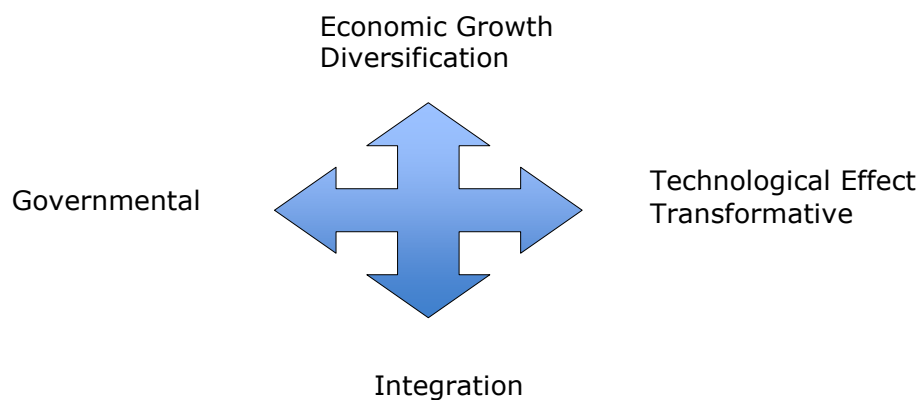
6.1 Summary of key themes

This essay has thrown up two fundamental tensions. The first describes the functions and nature of the current IT in Education marketplace and points to the trends which suggest greater integration of specialist and multinational companies. This is a continuum at whose opposite pole is the diversification and growth of small companies, especially galvanised by open source, open content developments and an increase in the opportunities for education institutions to join a plethora of suppliers. This continuum suggests that at the integration end there are problems with the integrity of the market. The other tension relates to the impact of technologies on the education system. It suggests that there is a continuum of technological effects with Transformative (learning) technologies counterpoised with Governmental control forms of centralisation and standardisation. Finally, I have argued that economic logic is thus bound up with questions about the capacity for innovation within segments of the education workforce.

6.2 The directions for Change

These tensions can be represented diagrammatically

FIG 6.2.1 Model of the relationship between Market tension in the IT Industries and the impact of technologies on Education



This shows that policy intervention can be directed towards each quadrant to try to lever desired effects, for example if more small companies trying to achieve transformative learning impacts are desired. On the other hand, some analysts suggest that the opportunities for interventions are limited and that the tendency towards increased governmental effects as part of greater market integration is inescapable.

Whilst the kinds of effect and the nature of developments are clear, such a formulation is uncertain about the possibility for intervention in that some approaches suggests only the unfolding of ineluctable logics. In other words the analysis brings together different conceptions of structure and agency. The former belongs to traditions where the new corporatism implicit in changing forms of global capitalism (Boltanski and Chiapello, 2007; Graham, 2005) is inescapable: and as I have already indicated, Monahan's work (2005) is positioned in the tradition. Of course, inducting learners into the corporatized world of IT is a preferred mode of preparation for work given the place of such scenarios in the new world order suggested by this model. Here educational practice is enacting a kind of social reproduction. Similarly, Stephen Ball's (2007) analysis of privatisation is also located in a larger theory of macro-economical political change. Here a binary opposition between private and public provision is 'overruled' by the larger macro-economic forces of neo-liberalisation. Of course this is a form of economic determinism

(acting maybe in this context as surrogate for technological determinism?) suggesting an inability to take political control.

The theorists offering support for spaces of intervention tend to stress politics and the human dimension. In terms of educational policy this focus on technology is part and parcel of larger concerns about the future of education. A new OECD publication, for example, suggests that we are on the cusp of deep change as new understandings of learning challenge the conventional paradigm of mass education (CERI, 2008). Interest and speculation about the effects of learning technology both drive, and are driven by, this orientation. However, this essay shows that aspirations for the use of transformative technologically driven learning are substantially mediated by the actual functions and operations of the IT in Education market and that it is irresponsible not to take these into account when developing and implementing policy change.

6.3 Timescales for Change

At the moment the huge investment of BSF seems likely to support the trend towards governmental uses of technologies driven by an increasing integrated form of market control. It may be that the ways in which more diversification will impact on a fragmented and stratified education system depend on a reduction of policy interventions (see 4.1 above). Current financial difficulties and the prospect of a new political settlement may indicate this scenario in the short term. Although it seems clear what the potential direction of change might look like, it is unclear, beyond these facts what other timescales might suggest.

6.4 Final Thoughts

One respondent speculated that if all the money made available though policies for IT in Education were simply made available as unrestricted funding within education, would it be spent on IT? This again begs the question about the nature of the demand side and puts the onus on the workforce. On one level, state policy would want the answer to this question to be 'of course it would be', which would be a way of justifying to itself the decisions it has already made. Many technology companies laughed when I put the question to them and suggested that such choice might not be great for business (which of course, as was pointed out, is also a responsibility of government along with education). But whether good business is good education clearly depends on who is asking (and answering) the question. Who gets to ask (and answer) that question will determine the future shape of IT in Education.

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