



ONE MORE PUSH? Curriculum Online beyond the Grid

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The following publications are also part of the @school project:

A Digitally Driven Curriculum (IPPR 2001)
edited by Joe Hallgarten, Leslie Ross, and Damian Tambini

ICTeachers (IPPR 2001)
edited by Joe Hallgarten, Leslie Ross, and Damian Tambini

Summary of recommendations

Vision

IPPR welcomes the fact that this government has an explicit, sustained commitment to harnessing the potential advantages of using ICT in schools. Achieving this vision will be possible only if:

- There is greater co-ordination between NGfL and other education policies.
- There is improved co-ordination between the NGfL and provision of other public services over the internet, including the issue of setting up of regional broadband consortia.
- The National Curriculum is changed to promote the teaching of digital literacy in schools.

Distribution / Infrastructure

The initial phase of roll-out is nearly complete. There is now a need to look to future systems of infrastructure procurement, and the era of broadband technologies. We recommend that:

- Ministerial support should be given for broadband content aggregation of demand with other public services such as health.
- NGfL Managed Services should be phased out in favour of group and regional procurement.

Content

Further steps are needed to fulfil the promise first made in 1998 that the government would help the British educational software industry to become a world competitor. We believe the following would help achieve this goal:

- Relaxation of the National Curriculum requirements to enable a wider range of educational products to be commercially viable.
- Incentives for schools to produce and trade content, including exempting sch2sch transactions from VAT.
- If national kitemarking of software is to continue, more research is required on its genuine utility. The General Teaching Council in partnership with providers and consumers should be responsible for the reviewing and approval system.
- The BBC to proceed with its plans for its digital curriculum, on condition that the Corporation plays an active role in stimulating growth in the UK content market. To this

end, we recommend that the BBC is required to commission a higher percentage of material from independent producers, and is also required to make its archives available to schools creating their own content.

- A commitment to sustained funding for content in the form of electronic learning credits, to ensure that schools will have the means to purchase content, and to assure the private sector that development of digital learning products is a sound area for investment.
- Careful planning to ensure that content provided by the NGfL is distinctive from that provided by the private sector, and other publicly funded portals.

Procurement

Procurement of educational software must be governed by the ideals of choice, inclusion, and quality. We argue that:

- Procurement of resources by schools and their representatives should be encouraged, and schools must be provided with the information and resources in order to become informed consumers.
- The idea of a centralised procurement system with a Lead Commissioner of content is a good one, however, there needs to be careful consideration before appointing one or more organisations as the Lead Commissioner. IPPR would like to see more discussion on this issue before a decision is made.
- The future Lead Commissioner should acknowledge the necessity of procuring materials that will promote critical digital literacy, creativity and autonomous learning.

Other issues

Use of Public Private Partnerships

- The use of public private partnerships in the NGfL must not be ideologically motivated. The private sector must not be brought in for the sake of it.
- As with other public services, all principal services, ideas and information in education must remain free at the point of use, with an explicit commitment to inclusion.

Teacher Training

- Build on the improvements in teacher's competence and confidence in using ICT in the classroom and ensure that each school has at least one dedicated, expert ICT teacher. Where necessary, extra help should be made available to primary schools to enable them to achieve this target.

Universal Access

- The debate on universal access has implications for digital learning. The government should make a commitment that every citizen will be able to access the internet from the

home.

- The NGfL should be linked to other government services, as part of the drive towards e-government.
- The National Grid for Learning should develop content for all platforms that are available to the majority of target learners, including mobile platforms. A balance between innovating for new platforms (e.g. broadband), and existing mass access platforms needs to be struck.

Critical Digital Literacy

- Curriculum Online should be used as a spur to put critical digital literacy skills at the forefront of a new National Curriculum.
- Internet safety is a key component of digital literacy, and should be addressed in the modified curriculum.
- The Government should make a commitment to using some of the money gained from the phone companies for 3G licenses to producing free, high quality educational content for the 3G phones.

1. Introduction

I am old enough to have lived through several cycles of educational technology, distance learning and the policy debates surrounding them. In each case, they have failed to deliver on their original promise and each cycle has ended with those with a vested interest in continuing investment in the field arguing for just one more push.

Nicholas Garnham, Professor of Communications, University of Westminster. (2000)

The Government's Consultation paper *Curriculum Online* outlines the next stage in the implementation of the Government's vision for ICT in education. In this response to the consultation, the IPPR @school team argues that creating an online curriculum constitutes a much greater challenge than acknowledged and that the policy proposals made in that document are not equal to the task. This paper outlines some areas where immediate action is required, and others where more research is urgently needed to inform action, particularly in relation to the National Grid for Learning, the central policy framework that has until now guided Government actions.

Substantial funds have been committed to digital education since Labour came to office in 1997. £1.8bn was committed to the NGfL for 1998-2002 – with most of this being spent on schools. The Government promised £700m to provide schools with money for ICT hardware, software and content. This was further boosted by the promise of a further £1bn between 2002-2004. The New Opportunities Fund (financed from the National Lottery) provided £230m to train teachers to use ICT in the classroom. Unlike earlier educational ICT policies, the National Grid for Learning was firmly steered by the then Department for Education & Employment (DfEE) alongside the revitalised British Educational Communications and Technology Agency (BECTa).

As well as the DfEE and BECTa, the key partners in the initial 'roll-out' of the NGfL were the local education authorities and IT industry. In particular, the importance of LEAs in the mediation of NGfL funding and resourcing to schools cannot be underestimated. The £700million of NGfL funding earmarked for the development of schools' technological infrastructure is matched central government funding from the Standards Fund; effectively meaning that local authorities are funding a total of £350 million themselves. When the NGfL was launched, its primary aims were to co-ordinate policy in relation to connectivity in schools and stimulate a market in content development. A series of targets were set for 2002, which can be seen as the Government's official criteria for initial 'success'. These targets included commitments to:

- Connect all schools, colleges, universities, public libraries and as many community centres as possible to the Internet (and therefore the Grid) enabling ‘perhaps 75 per cent of teachers and lecturers and 50 per cent of pupils and students to use their own e-mail addresses’.
 - Ensure that serving teachers feel confident and are competent to teach using ICT within the curriculum.
 - Enable school leavers to have a good understanding of ICT, with measures in place for assessing their competence.
 - Ensure that general administrative communications between education bodies and government agencies largely cease to be paper-based.
 - Make Britain a centre for excellence in the development of networked software content for education and lifelong learning, and a world leader in the export of learning services.
- (DfEE 1997, 1998)

Since then a great deal has changed, and the Government is rightly asking searching questions about the future of NGfL and related public initiatives.

Technologies and markets are constantly changing. In the past, educational TV packages were relatively simple: linear media broadcast overnight or delivered on videotape. Now, digital television products are non-linear multimedia packages that can include web links, text files, animated graphics and automated marking. Broadcasting and communications systems are converging, with ever-diminishing distinction between the web and television broadcasting. At the same time, the media industry is characterised by intense merger activity. Government and the private sector are right to be excited about these developments, but need to acknowledge that these changes raise new issues about intellectual property rights, interoperability and competition, which demand a clear set of Government policies across the sector.

How can we encourage innovation and market entry whilst safeguarding quality? How, in a converged environment can we deal with commercial players who lever market power from public education into commercial web services? Is the market-making work of central government done, or is there a longer-term role for public digital curriculum services? These questions will not be resolved in this document, we will highlight some new policy principles and guidelines that must be taken into account in the new environment.

The current development of markets in online education services has been a useful ad-hoc process of innovation, but too often remains fragmented and opaque to the user. Markets and quasi-markets will be the key tool to foster innovation and ensure that the UK develops the quality content that will perform in the global marketplace. However, it is vital that we are

absolutely clear about the scope and nature of these markets, and ensure that the right structures are in place.

As what can now be seen as the initial phase of the narrowband grid beds down, the longer-term content issues come to the fore. The simple message is: there remains a clear role for a public sector intermediary to sort and sift the range of available interactive educational services, and assist teachers, LEAs and schools. The current plurality of intermediaries is good for choice and innovation, but in time could fragment necessary investment and create competition between public sector portals that will be wasteful from the point of view of the education sector as a whole. The danger of such protracted quasi-market competition could be that teachers and learners alike have a very frustrating experience of the internet and digital services more broadly.

In the long term the Government's ambition for multipurpose materials that will be usable on PCs, Digital TVs, the Internet and Electronic Whiteboards creates serious challenges in terms of interoperability, with implications for competition between providers and platforms. Without a continuing leading public educational presence, the Government will lose any standard-setting role, both in terms of quality of content, and interoperability, and therefore be impeded in its progress.

The consultation rightly puts the focus on content issues. There the central challenge is to give teachers and schools the choice and diversity that they need, but also ensure that they have the necessary support to access and use digital education resources. Above all the policy challenge is to ensure that Curriculum Online fulfils its potential to deliver learning resources of unprecedented quality, increasing motivation and removing barriers to learning.

2. Vision

The Government's Vision

We want there to be online materials that teachers can use to support the teaching of every subject for every age group. We want these to be capable of being used with interactive whiteboards, PCs and over digital TV, so that they can contribute to teachers' lesson planning as flexibly as possible, as well as supporting homework and family learning. And we want these materials to form a consistent whole. We are calling this vision Curriculum Online.

David Blunkett 2001

This is a revolutionary vision, which goes beyond the scope of the last major policy framework, the NGfL. Like other areas in which public services are being fundamentally changed by the use of ICT, the initial vision and abstract view of what is possible is crucial, but tends to underestimate the degree of institutional and policy challenge involved. The implications of the vision need to be more fully explored, and the lessons from the first years of the NGfL experience learned. Above all the vision needs to be broadened. Whereas the NGfL was focused on a delivery model of education and the infrastructure issues, a deeper understanding, including awareness of the strategic challenges facing education institutions and Government is now crucial. We need to be hopeful but sceptical of the claims made for the new media, and aware of the complex technological and infrastructure problems to be surmounted before the vision is put into practice.

At the same time it is imperative at this stage also to speak openly about some of the more sensitive areas in digital education, such as the place of commercialisation and advertising in PPP content, and in whose hands lies authorship of curriculum content. Furthermore, the debate about digital education must also tie in with the broader debate about PPPs in general, addressing problems such as accountability, transparency, risk allocation and contracts. Only by addressing these problems can the Government send out a clear signal by laying down general policy principles in this area, and stand a realistic chance of delivering on the bold vision behind Curriculum Online.

We therefore welcome the proposal to revamp NGfL as a portal of choice, but argue the following:

- The proposed developments will be futile without a strategy that also applies to the other publicly funded educational portal sites in the market. The greatest problem facing content mediation and delivery is a lack of consumer information and transparency, as well as competition between the various portals, which create difficulty for the user.
- A consolidation of portal branding and kitemarking will need to be applied in terms of

clear and transparent guidelines regarding commercial and advertising content; privacy and internet safety.

These points are developed in more detail in section 3.

3. Distribution and Infrastructure

The following table is a summary of recent Government statistics regarding ICT infrastructure in schools:

	Primary			Secondary			Special		
	1998	1999	2000	1998	1999	2000	1998	1999	2000
Average number of computers (including, desk-tops, lap-tops and palm-tops) per school	13.3	16.1	17.8	100.9	101.3	112.6	18.5	21	21.3
Percentage of computers over three years old	54.6	52.1	46.2	56.9	50.2	44.5	57.7	51	44.2
Percentage of computers with multimedia facilities	26.9	44.5	59.8	25.2	36.9	54	34.6	48.9	66.5

DfEE October 2000

On average, 98 per cent of all schools are connected to the Internet. Schools are spending significant amounts on ICT, an annual average of £6,800 per primary and £48,100 per secondary school. Technologies such as video-conferencing and electronic whiteboards are also beginning to be integrated into some primary and secondary schools and classrooms.

In designing the NGfL, the Government expressed the desire that schools should have control of their own hardware purchasing. However, it was recognised that many schools would lack knowledge of IT, and would need help and advice on the new technology, in order that they purchase technology appropriate to their individual needs. To alleviate these concerns, the Government made specific arrangements provide advice about hardware and software, by introducing a kite-mark in both hardware services and software. The idea was that schools should purchase technology suitable for their individual requirements, with money that they controlled.

In hardware services, there is a list of approved suppliers of 'NGfL Managed Services'. However, the take-up of NGfL Managed Services has been slow. An interim report from OFSTED (April 2001) cites the high cost of these services as the reason. A more common strategy is for schools to use an alternative form of managed service in the form of LEAs offering advice on procurement and often negotiating with ICT providers (NGfL Managed Services or otherwise) and then purchasing on behalf of a group of schools. This has two advantages: firstly it ensures that the schools will get the same level of ICT service and secondly, bulk-buying allows considerable savings to be made. As a result, this policy guarantees that schools with limited knowledge of the ICT market get a decent service at a reasonable price. The alternative of centralised procurement would constitute unacceptable State interference in schools' management. Schools should have relevant information, but the freedom to make their own choices.

Policy challenges

At present, schools or their representatives purchase hardware from private providers. As long as all schools are able to choose and purchase appropriate equipment, there are few problems. However, the future of ICT funding in schools is uncertain. Most of schools' budgets from ICT comes from their delegated budgets, with up to 30 per cent coming from the NGfL Standards Fund. The costs of providing hardware and software are, to a large extent, already met by the schools' own finances. This raises the question of whether schools will be able to continue to afford the high costs involved, especially when NGfL money becomes less available. Although schools' budgets are shouldering much of the burden of the cost of ICT equipment, the Standards Fund money is still necessary.

Two things are needed to ensure that schools can afford to maintain and upgrade their systems in the future. The first is that schools' budgets need to be reformulated to take account of the costs of ICT maintenance. The second is that group procurement, which allows economies of scale, should be encouraged. The LEA can play a major role in this (as it already does in many areas). As more schools use their LEAs for advice and for negotiating ICT contracts, and others develop the expertise to 'go it alone', or with alternative clusters of schools (for instance EAZs), the Managed Services scheme can be phased out. The advantages of group-led procurement look even greater when we consider not only school servers, processors and monitors, but look further ahead to the era of broadband. It is anticipated that broadband connections will be the next essential purchase for schools. The cost of broadband is estimated as roughly £10,000 per school per year¹ which many schools will struggle to meet. However, a pilot project in Telford provides a model of how broadband services for education may be made affordable. Put simply, the idea is for a local broadband network to be set up across a whole local authority, and shared by all public services, including education. Each service would be allocated its own share of the network, a secure 'Virtual Private Network'. As a result only one network would be needed for all public services. On this system, economies of scale are readily available, and can be increased if the policy is then scaled up to regional level.

If an LEA joins up with other local authority services first, then substantial savings can be made. An additional benefit is that the rollout of broadband infrastructure will be stimulated by increased public sector demand. This also gives a good example of the way in which LEAs can reinvent themselves in an enabling, multi-agency role.

To achieve this, the following factors need to be in place:

- Good relationships need to be maintained or regained between some LEAs and some schools. Schools must not be forced to accept LEAs advice, and should be free to make

their own purchases. The task is to make the group-procurement system attractive and genuinely the best deal for schools.

- There need to be assurances that any advice or negotiation offered by a public or private body will be motivated entirely by the interests of the schools. Cases have been reported where LEAs have ‘steered’ schools to one provider. The centralised reality/de-centralised rhetoric of the NGfL makes this inevitable – in theory the LEA is just one more source of advice and support. However, with the LEAs acting as gatekeepers to the Standards Funding for infrastructure and training, their role is much more than that. Many LEAs are now setting up structures designed to support schools in procuring goods and services and, where appropriate and agreed, to negotiate on their behalf. Support for ICT procurement must form a major part of this new role.
- All levels of government should support current arguments for demand aggregation in broadband procurement, which is already happening sporadically between educational institutions. There is an urgent need for co-ordination between educational institutions and other public services, as the Broadband Stakeholders Group (DTI) has argued. Such cross-agency/cross-departmental co-ordination is proving very difficult to achieve, and the objective should be to seek support for this model of broadband procurement at ministerial level.
- In further development across the range of education initiatives, principles of open access should be encouraged. LEAs, schools and individuals should be encouraged to switch between platforms and use of one distribution platform should not confine users to one content provider, so that distributors are not able to leverage power from educational content markets.

4. Content

The Government made substantial funds available, to organisations to develop educational software, and to schools to purchase it. 15 per cent of Standards Fund money given to schools to spend on ICT is earmarked for purchasing content (*TESOnline* 13 October 2001). In the years 1999-2000, primary schools spent on average £670 on software and content; secondary schools spent £4,340 (*DfEE Statistical Bulletin* October 2000).

Publicly funded services, such as libraries and museums have received money from the New Opportunities Fund to put resources and content online and link to the central National Grid for Learning Site. They also receive assistance through Culture Online. The BBC is spending significant sums of licence-fee money on developing online educational content. The Government made available substantial funds for private sector research and development of digital education resources.

At present, the content element of the Grid consists of a central NGfL website, with links to content providers, and the Community Grids serving the local level. The central site hosts a large database of educational resources, as well as links to cultural sites, such as museums, and education news. There is a kitemarking scheme, which awards a NGfL 'badge' to sites that comply with BECTa rules for content and layout. Users of the Grid can therefore see which are approved sites, but can access both approved and non-kitemarked sites from the NGfL portal. This is to ensure that users have the greatest possible degree of choice, and can refer to the NGfL guarantee of quality should they wish.

High quality software is just as essential for delivering a digital curriculum as having up-to-date hardware. The Government's policies on ICT have created a demand for curriculum-related software – as intended. However, there has been little corresponding success in stimulating supply. At present, the market is underdeveloped, and urgent steps must be taken to encourage innovation.

As already noted, there are funds available for public institutions to put content on the Grid. In an attempt to kick-start the market, the Government gave money to Anglia, Granada and the BBC to develop digital curriculum materials. Smaller organisations are also being encouraged to put content on the web. Many schools now have their own websites, and increasing numbers of community grids are hosting curriculum-related resources in addition to general information about education services. There are signs that a school-to-school market may emerge – the Thomas Telford school expects to make £2.5m next year from selling its online IT course to other schools. (*Financial Times* 22 February 2001). This is an exciting development, with the potential to contribute extensively to school's revenues, and teachers' professional development.

Despite the many exciting possibilities for educators and the software industry, the market currently exhibits scant evidence of the creativity and entrepreneurship usually associated with the private sector. This seriously undermines the learning potential of new and emerging technologies. The software industry can only flourish if both the private sector and the education sector are satisfied. The private sector needs to be convinced that investment in research and design will make a good return. The education sector needs to be assured that both pupils and teachers will benefit from using the packages.

Problems and unresolved issues

The commercial sector has given three main reasons to explain the current state of the market, and we will discuss each of these in turn. The reasons are:

- 1 Scepticism about the NGfL kitemarking scheme
- 2 Uncertainty about how (or whether) to accommodate the National Curriculum
- 3 Uncertainty regarding the possible impact of the BBC's digital curriculum

The kitemarking controversy

The Educational Software Publishers' Association has objected to the use of the NGfL badge, arguing that a kitemarking scheme is unnecessary - an 'expensive white elephant' (*TESOnline* 13 October 2000). The industry argues that market forces will guarantee high quality software, as schools are able to judge for themselves what software packages are useful and buy accordingly. As schools have managed for years without a list of approved textbook publishers, creating a list of approved content providers is at best unnecessary, and at worst, Government interference in the market.

Supporters of a kitemarking scheme argue that there is evidence to suggest that teachers are not in fact ready to make judgements about what constitutes good-quality software. The British Educational Suppliers Association published a survey reporting that 47 per cent of teachers were judged as 'confident or competent' at using ICT in the classroom (BESA 2000).² It is reasonable to assume that this could impair their ability to choose the best. Additionally, a national kitemarking scheme is a good way of distributing information about software packages to consumers both at home and at school. One of the benefits of a digital curriculum is its ability to bridge the home-school gap. Even when teachers are able to choose appropriate software, there will be parents who wish to buy materials but lack the relevant knowledge.

There are of course, other sources of information available to teachers - for example, the LEA might provide advice, and teachers can review software themselves, informally or formally through organisations such as Teachers Evaluating Educational Multimedia

(www.teem.org.uk). In time, these will probably become the main source of information about products. In the meantime, there remains a need for a quality-assurance scheme.

However, there are problems with a kitemarking scheme run by the state. This government has already grasped an unprecedented influence over pedagogy (in particular, through the national literacy and numeracy strategies). Further kitemarking of online resources would leave them further open to accusations of control freakery. In an area in desperate need of risk, state-sponsored kitemarking is likely to be overcautious. The former Secretary of State's recent difficulties over a DfEE-supported citizenship book criticised as 'psychobabble' exemplifies this predicament (*TES* 15 Dec 2000). Finally, as can be seen by the long delayed deliberations over the digital curriculum trials, central government or its sponsored agencies may not be the most effective pickers of winners. If kitemarking is to continue, further research is required on its genuine utility.

Ideally, a standard-setting mechanism should be owned by those who will deliver and use the resource. If there is to be some kind of nationally recognised kitemarking or reviewing process, the General Teaching Council in partnership with resource providers and consumers is perfectly located to deliver such a process.

The National Curriculum

Some commercial software producers have argued that the nature of the National Curriculum is at least partly responsible for hampering the market. As schools are obliged to follow the curriculum, only materials that closely follow it will be commercially viable. The private sector will not develop innovative products that develop the market if schools will not purchase them. As one commercial sector representative put it 'we are all afraid of jumping in and getting it wrong'. If the curriculum and associated assessments are modified to include the concept of digital literacy and encourage more creativity and independent, individualised learning, then schools will buy new, innovative software, rather than simply downloading lesson plans.

There is a good case for making the National Curriculum less prescriptive. Computers can be used in two different ways - either to carry out tasks more efficiently, or to create new opportunities to experiment and develop new skills and ways of thinking. At present, computers are mainly used as tools in the first sense. As Selwyn and Brown (2000) point out, in the UK, 'standards' are very rigorously defined, and defined in traditional terms. Other countries such as Singapore and Malaysia are attempting to use the introduction of computers in schools as a means of transforming the curriculum, encouraging creative problem solving and information management skills, which are widely recognised as being key skills in the global, high-tech workplace. The UK's national curriculum does not pay sufficient attention to

these skills. A curriculum that prioritises content over skills may always act as a liability to innovation, particularly regarding new technologies. Even though the National Curriculum affects the software market only indirectly, its effect is highly significant and often damaging. If the Government wishes the educational software market to develop, it must be aware of this.

In the Green Paper *Schools Building on Success* (DfEE 2000) the Government introduced the concept of ‘earned autonomy’. Under the measures proposed, outstanding schools will be able to apply the curriculum much more flexibly. This will hopefully allow teachers to innovate in the classroom, and enable the software industry to develop products that go beyond the rigid confines of age-based curricula and assessments. For example, the private sector could develop applications and software that enables students to create their own multimedia teaching packages. One problem that has been overlooked is that earned autonomy will be beyond the reach of all but a few schools. Schools might need the increased freedom in order to become outstanding. If this turns out to be the case, there will be an even greater divide between the ‘digitally included’ and the ‘digitally excluded’ schools. We therefore recommend that the national curriculum be updated to include digital economy skills, and that schools and pupils get greater choice over what and how they teach and study. The focus of education policies should be quality assurance, through facilitating a supportive learning and teaching environment, rather than quality control via prescription of syllabi and assessments.

The BBC

The BBC’s plans for education are ambitious, and have greatly worried the commercial sector. Software companies complain that the BBC’s plans could ‘kill the industry’ by assuming monopoly provision. A BBC monopoly would be disadvantageous to schools too, because relying on one public content provider will not help schools teach critical media literacy. This is not in the interests of consumer choice, and would certainly be a death-knell to the Government’s original plans of a mixed market. However, as the services will be free to air, no school will fail to receive high-quality content because of a lack of funds. When inclusion is the top priority, the BBC’s position is very strong.

It could be suggested that the BBC’s plans might not even damage the profits of the private sector. A report by the consultancy company Spectrum, commissioned by the BBC, has denied that the BBC’s plans will have any adverse impact on the profits of commercial children’s channels, because it will not be competing for advertising revenue, and above all, because the digital content market will expand sufficiently in the next few years to ensure that there will still be a huge demand for commercially produced content. Given that the educational software market is expected to expand rapidly, a similar argument could apply to the BBC’s plans for education services. It is unwise simply to assume that the education content market will develop a large independent production sector, as has UK broadcasting. But in broadcasting,

independent production was a creation of the 1990 and 1996 Broadcasting Acts, which establish quotas for independent production and prevented the powerful producer-distributors excluding them. For this reason, we strongly recommend that quotas are maintained, and even increased for the educational content market. The BBC's promise to use UK-originated content and stimulate the UK production base should be supported by stipulating that the Corporation must buy a proportion of its content from UK-based independent production companies and encourage production companies to collaborate with schools and teachers in developing materials. In addition, the BBC archives should be made available to schools for the use of developing their own content. This will encourage the emerging sch2sch market, and enable teachers and students to take an active part in content production, and gain new and relevant skills.

Commercial organisations will be able to enter the expanding content market, both for home and school education, or focus on developing 'value added packages' - content with extra marketable applications and tools that will develop information management skills in tomorrow's citizens.

Summary: What kind of market?

Recent experience of the internet environment shows that whilst a plethora of competing services is healthy for innovation, too much content and choice creates genuine problems for consumers, who are unable to choose from such a variety of options with imperfect information in fast changing markets. There is a clear role for an intermediary and market maker. Developing the NGfL portal as a one-stop-shop where learners and educators can gain advice, purchase or access content and become part of an online educational community has the potential to make choices easier for consumers, and to make transactions easier for business.

The government's task is to stimulate the content market, by removing some of the restrictive structures highlighted in this paper.

The priority should be to address the problems caused by a restrictive National Curriculum. If ICT is going to change the way children learn, then the curriculum needs to be modernised, with more emphasis on skills and attitudes and much greater flexibility. There is little point in using ICT if it means that children are going to use online versions of the same textbooks, and do the same tests as five years ago.

- We therefore recommend that the requirements of the National Curriculum should be relaxed. Schools should be given greater autonomy – earned autonomy should be within the reach of all, but targeted support should be available in the period in which new technologies become more pervasive.

If the curriculum is relaxed, then the market has a chance to expand, as a greater variety of software has the potential to be commercially viable in Britain. In addition, providers can work on developing materials which not only appeal to British students and teachers in schools, but can develop more generic material that would have a market outside the UK, or outside of normal educational circles. If the market is set to expand then it is reasonable to assume that there can be space for many types of content providers, public and private, big and small. This is also the most desirable state of affairs. If the Government wishes all schools to have genuine choices, the affordability of services is as important as plurality. A lack of resources prohibits choice just as effectively as a lack of supply.

In creating a mixed market, the Government should encourage schools to become content creators themselves and share resources, or even, as the Thomas Telford School has done, to sell content to other schools. IPPR would welcome the development of a sch2sch market, with the NGfL acting as the portal. The sch2sch market is not only potentially lucrative for schools, but it can also contribute to the professional development of teachers, and encourage collaboration between schools.

- Our second recommendation is that to promote the sch2sch market, exchange of content between schools should be free from VAT, and achievable through the exchange of electronic learning credits between schools.
- Our third recommendation is that the BBC consider allowing schools developing content free use of its archives.

If these steps are taken, it is reasonable to expect that the content market will expand and exhibit quality and diversity of products. However, at present, there is no guarantee that market forces, left to themselves will provide high quality educational software. For this reason, it seems that a form of regulation is necessary, whether administered by central government, or by another body is necessary, at least whilst the industry is relatively immature.

- Our fourth recommendation is that the General Teaching Council assumes responsibility for giving quality assurances on educational software.

5. Procurement

In the consultation paper *Curriculum Online*, the Rothschild proposals for e-procurement of content are accepted, but it is suggested that the system of electronic learning credits runs alongside a central procurement system. The advantage would be that the market is mediated, thus ensuring coherence of content, and that all schools would be able to access low-cost (even free), high-quality content. The paper asks whether the central procurement should be the responsibility of the DFES, or a different ‘lead commissioner’.

The IPPR @school team believes that more consultation and research is necessary before a decision can be taken on this issue. The very existence of a lead content commissioner has not been sufficiently justified. However, if this role is to be invented, the following should be taken into account in deciding on who the lead content commissioner should be:

- The principal advantage of central procurement run by the DfES is that the content would be guaranteed free to schools. However, as the consultation acknowledges, content producers will have expertise that will be most relevant to commissioning and providing content. As we argued earlier, a regulatory system should have significant involvement from organisations representing the end users.
- Having a content producing body involved with the commissioning process raises concerns about bias. Although the expertise contained in content producing organisations must be utilised, giving one content producer superior status as a lead commissioner could damage the emerging market, and would seriously alarm the other content providers. The lead commissioner should discriminate only on the grounds of quality.
- A lack of plurality in sources of material available is a problem from the academic and political point of view. Therefore a balance between concentrating the skills and investment needed for quality and ensuring a plurality of sources of quality digital material must be struck.

The transition to digital challenges existing structures that determine what is valuable educational material. In order to ensure continued educational excellence of content, Curriculum Online must include current educational gatekeepers in the process of curriculum development, assessment and review, rather than growing a parallel universe based on competition between portals and between kitemarks. At the same time government should actively encourage excellence in this field by ensuring that the very best in UK educational expertise is brought together with the very best in software and technical innovation. There are a plethora of committees, plying for the participation of the ICT industry’s best minds. Unless the lead commissioner is given real organisational prestige, it may struggle to attract the expertise it desperately needs.

6. Other issues

It has been a constant theme of this paper that the issues identified for consultation are important, but there are several more that need to be addressed:

Public Private Partnerships

It has been widely reported that the Government intends in its second term to encourage increased involvement of the private sector in the delivery of public services. Indeed, this is the principal strategy for improving public services provision. Education has not escaped this growing trend, and the private sector is now heavily involved in school support services, and is increasing its involvement in the management and delivery of teaching and learning. It is therefore entirely consistent that the consultation makes several suggestions of public private partnerships and joint ventures between government and business.

The government expects the private sector to have a role in redeveloping the NGfL site, in providing content for the curriculum, and in delivering content to schools and homes. If this is to be a successful strategy, lessons of past public private partnerships (PPPs) in education and ICT must be learned.

Problems of PPPs have included:

- Failure to agree a set of clear and effective contractual obligations leading to disputes over responsibilities.
- Excessively ambitious timescales for bedding in new systems.
- Failure to agree risk allocation and management.
- Failure to effectively monitor the progress of the work leading to repeated rescheduling, delay and additional costs.
- The fact that administration of the competition procedure can be costly and a lengthy process.

In addition, the choice of partner can be controversial. The contracts process must be completely transparent in order to avoid criticisms of favouritism, and the public must be satisfied that any private providers of services do not use their position as a (local or central) government partner to unfairly influence other decisions. In education, there are additional problems of finding an appropriate balance regarding commerce within the school, and advertising to children. This is particularly relevant given the criticism of the decision to award of the digital curriculum tenders to the BBC and Granada, rather than including smaller broadcasters and software developers, who were discouraged by the original tender, and feel that the terms of this tender changed during the trials.

In principle, there is no reason why a successful public private partnership cannot achieve the aims the Government has set out. However, given the problems that PPPs face across public services, we recommend that great care is taken in setting up partnerships. We wish to emphasise in particular, that a strong and informed public sector is key to the success of any PPP. The best sorts of PPPs will not be privatisation by stealth, but will depend on a strong and flourishing public sector to deliver services in the public interest.

Teacher training

Unless teachers have the skills and confidence to use ICT, the aims of the NGfL can never be realised. Before the initiative, ICT skills levels of teachers varied dramatically. In general, secondary schools had more staff familiar with at least some aspects of ICT, as many offered GCSE IT to their pupils. The National Grid for Learning has had a number of initiatives designed to motivate all teachers to learn and use the new ICT skills. The first priority was teacher training. ICT proficiency was made a condition of gaining teaching qualifications to ensure that all NQTs would have the requisite skills. Schools are now responsible for ensuring that their existing staff have the necessary ICT skills, and Lottery money is used to fund this extra training. Under the present system, the New Opportunities Fund provides funding for teacher training, but schools have the final responsibility of choosing the training provider. To aid them, the NOF circulates a list of training providers approved by the Teacher Training Agency. In addition, since the early days of the Grid, there have been initiatives to encourage teachers to own computers and get involved with online communities, such as the NGfL-funded Virtual Teachers' Centre.

The idea of having an approved list of training providers made sense in theory, but the way it was compiled gave schools little valuable information. As the *TES* reported (12 May 2000 and 13 October 2000), the scheme was administered in a secretive way, and a lack of regular updates made the information unreliable. This process is in need of reform. One possible reform would be to use a kitemarking and review system for identifying the best training providers instead of assuming that all providers are satisfactory unless proved otherwise. This would reduce the chance of schools wasting funds on training that is subsequently found to be inadequate.

The use of on-line forums for stimulating the sharing of educational practice has proved only partially successful. Setting up an online community of teachers was a good idea, but the execution of the Virtual Teachers Community project means that public money has largely been wasted. The VTC has not yet proved popular with teachers. In contrast, Ultralab's 'Talking Heads' project, supported but not run by the DfEE, has received a far more enthusiastic response. As there were already competitors in this area, the VTC would have had

to offer something significantly different to be a worthwhile venture.

IPPR welcomes the improvements in teachers' abilities in ICT, and we would like to see further improvements. The greater the skills levels of teachers, the greater the potential for schools to become involved in developing, purchasing and applying ICT themselves. It should be the eventual aim that all schools, should have a dedicated and expert ICT teacher. Many secondary schools are well on the way to this, so we recommend that primary schools should be given extra help where necessary to achieve this goal.

Universal access

It is imperative that the NGfL is available to all and is co-ordinated with other programmes to bridge the digital divide.

The Culture Select Committee's report (2001) on the recent Communications White Paper called for a new approach across communications policy, making access to public services a priority for example in digital TV regulation.

Government should seek to negotiate free or preferential home access to a defined internet education space (for example, the government education portal, or a pupils' interactive school web page).

IPPR has long argued that the Government's promise of 'universal internet access by 2005' should mean *access to the entire internet, from the home*. The importance of home access cannot be overemphasised. Within the broader project of e-service delivery it is the only way to ensure that e-government does deliver benefits in terms of convenience and efficiency of services to the citizen. In the case of school age education services, where children often cannot leave home unsupervised, and there are huge inequalities in access to books, the benefits of a co-ordinated home access policy would be huge. Curriculum Online should therefore support a broader commitment to encouraging broader internet access from the home, be that via TV, computers, or other devices. Currently around 37 per cent of homes have internet access, and it is the higher socio-economic groups that are more likely to have internet access and use it for educational purposes (Office of National Statistics 2001). This creates serious dilemmas for public funding of internet educational content, since its free provision would benefit those that already are relatively privileged.

Internet content can be accessed through many different technologies, from computers to mobile telephones. NGfL content should be available on all formats to ensure the widest possible access. At the moment, it is assumed that most people will continue to access the

internet through computers with narrowband modem connections, with a gradual shift towards broadband, and digital television. Content development for a variety of platforms creates some difficulties: should we assume that all platforms will be ubiquitous, and invest in new technologies, or focus on the established platforms? Clearly, content procurement and development should be carried out with a close regard to current access and penetration figures.

For example, many companies pursue a two-track approach to broadband educational content: accepting that most access is via narrowband connections they focus most resources on those services that will be accessible only via narrowband. Given the significant barriers to rollout of a universal, broadband network there should be some scepticism regarding broadband content, which is designed for access from home, though in time it will become more accessible. This has implications for procurement of content: commercial investment decisions are a sensible way to support innovation in newer platforms where there is uncertainty regarding the future accessibility of a platform. Public investment should focus to a greater extent on established technologies.

For example, the Government might make a commitment to using some of the money gained from the phone companies for 3G licenses to producing free, high quality educational content for the 3G phones. With the pressure on the telephone companies to recoup the billions, they may well ignore education in favour of better selling content.

However, it must be remembered that universal access should be seen as a means to universal usage, and usage that removes barriers to learning, rather than as an end in itself.

Digital literacy

Earlier in the paper, we argued that the content market will suffer if the National Curriculum is not modified to encourage independent learning and digital literacy. Economic issues aside, there is a pressing need for digital literacy skills to be taught to schoolchildren. Curriculum Online may have proved the Government's commitment to online learning, but this is not the same as equipping tomorrow's citizens with the skills they will need to participate in the digital economy.

When setting up the National Grid for Learning, the Government emphasised the need for schoolchildren to be taught the skills needed in the future economy. In order to achieve this goal, the Government must be aware of the need to go beyond giving teachers and students technical skills in ICT. If the UK is to be a player in the new economy, schools must teach digital literacy. David Buckingham (2001) argues that children must learn critical skills: how to criticise and evaluate media, to protect themselves from exploitation (including commercial

exploitation) when using the internet, and should become involved in production, as well as consumption of new media.

The development [of a digital curriculum] of this kind is necessarily an incremental process, but it will require a willingness to think beyond the limitations of the current National Curriculum – and particularly in terms of what is included in the area of literacy. The curriculum can no longer be confined to a narrow conception of literacy that is defined solely in terms of print. Producing teaching materials and providing specialist training on critical digital literacy should become a central component of the government's literacy strategy. If the government were to draw upon the range of expertise and experience that already exists in this field, this could be brought about relatively quickly.

(Buckingham, 2001)

Internet safety is another issue that receives insufficient attention in the consultation. Despite repeated calls from the Home Office, and the European Commission for actions to promote public awareness and responsibility regarding children's internet use, research shows that the internet remains a dangerous place for many children. Any government policy on digital education that fails to acknowledge this is running the risk of appearing negligent. Merely providing another web link to safety advice or a complaints portal is not enough. According to Mitchell et al (2001), more than one in five child internet users in the US reported that they had been solicited for sex in chat rooms. In the short term, internet proficiency testing will be an effective way of kick-starting a public awareness campaign.

Lack of joined-up thinking in education policy

There is a lack of co-ordination between the National Grid for Learning and government initiatives in other areas of education. The NGfL is but one of a multitude of education-related policies, initiatives and funding decisions announced by the Labour government in its first term of office. Despite the National Grid for Learning's specific emphasis on ICT, similar commitment to the use of technology in teaching and learning is less integral in some of the other major education initiatives that teachers are also having to deal with. For example, the practical implementation of both the literacy and numeracy strategies are currently inconsistent with regard to ICT. The dangers of sending teachers 'mixed messages' about the centrality of ICT to education practice are clear. In primary schools, for example, given the specific and pressing nature of the literacy and numeracy strategies and national assessments, coupled with the rather less rigorous and accountable NGfL targets, it is of little surprise that some teachers are choosing to eschew the good intentions of the relatively distant NGfL for the more imminent challenges of other initiatives.

7. Conclusion

This document has argued that by and large the Curriculum Online vision is a worthwhile strategy, and that there should indeed be ‘one more push’ to bring it to fruition. That push should not be based on a mere compromise between those interests that seek to benefit from the new market. It requires a genuine vision about enabling a sustainable ecology of digital education that will deliver quality and valued educational resources, and it has to ensure that both students and staff develop new skills. As an overall government strategy, however, the vision should not be to put in place permanent structures, but rather to facilitate the development of a genuine market, in which schools, teachers and education authorities are empowered rather than excluded. The key elements of a strategy to make that happen have been outlined.

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Endnotes

1. Estimate of a business manager at RM, quoted in *The Guardian* 9 January 2001.
2. The Government's figures for 2000 show that 32.2 per cent of primary school teachers and 33.9 per cent of secondary school teachers lacked confidence in using ICT.

