Curriculum Online –
a Consultation Paper

NGfL
National Grid for Learning

DfEE
Department for
Education and Employment

Foreword by the Secretary of State

The use of digital technology for improving the delivery of education has enormous potential to raise standards and increase employability. That is why we have invested so heavily in the National Grid for Learning programme to provide teachers and schools with the training, hardware and software that will enable them to use Information and Communications Technology effectively in the classroom.

But we must also enable teachers to show pupils when it is most effective to use new technology, and when the traditional tools may be more relevant. We know that ICT cannot be an ad hoc addition to what schools do. It must be a carefully thought through contribution adding real value to more traditional teaching methods and reinforcing our investment in the basics of education.

That principle runs through the vision we set out for consultation in this paper. 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 television, 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'.

We are consulting now about how we achieve this vision. We see an important role for a wide variety of digital content producers, working in partnership with Government and other agencies in order to deliver the best possible result for the education service and for the economy as a whole. We would welcome views about the options set out in the paper for achieving our goal.

David Blunkett

David Blunkett
Secretary of State for Education and Employment

1. Introduction and Summary

1.1. This paper sets out for consultation options for the next steps towards the Government's vision for delivering higher standards of education and increasing employability through the use of Information and Communications Technology (ICT). We have recognised the potential of digital education to complement traditional teaching methods in raising standards and have already introduced a range of programmes to take advantage of it. These range from the Ufi's learndirect service, which will stimulate demand for lifelong learning from adults and businesses, through to the National Grid for Learning programme in schools and Culture Online, providing access to the resources of the cultural sector.

1.2. This paper focuses particularly on the next steps in using ICT to promote the learning of school-aged chidren. A great deal has already been achieved through the National Grid for Learning (NGfL) to provide schools with the hardware and connectivity that they need in order to make the most effective use of ICT, and very large numbers of teachers have received training. In addition, progress has been made to provide high-quality online resources, and the NGfL site is already the largest educational portal in Europe.

1.3. We now wish to ensure that progress in the provision of digital content matches progress in the provision of infrastructure and in teacher training. If we are to maximise the effectiveness of the use of ICT in schools, then it is clearly necessary for all of these to advance together, to take advantage of developing technology. It is now particularly important that digital resources are made available to support teaching and learning across the curriculum. The development of these resources offers both real educational benefits and significant commercial opportunities.

1.4. We are therefore taking a number of important steps towards helping to ensure that in the future digital resources will be available in schools. We commissioned a major study of the future development of the National Grid for Learning, and plan to take forward its recommendation that the NGfL portal should be developed to help parents, teachers and pupils to find and use digital content. We will be investing a total of £22.5 million in taking forward proposals for a 'Cybrarian' – a digital librarian to help learners to make the most of the available educational materials. And we have recently announced a successful conclusion to our competition for the provision of six digital GCSE courses.

2. The Value of ICT in Education

1.5. This is an important start, which is likely to stimulate demand for more materials and which we want to build on. We want there to be a coherent set of rich digital resources available across the curriculum to support the learning of children of all ages and abilities, and for these materials to be delivered consistently through a variety of channels, including for example over digital television, to support homework and family learning. We are calling this vision 'Curriculum Online'.

1.6. There is a spectrum of options for achieving our vision. We see a major role for a re-vamped NGfL portal as part of the delivery system, perhaps developed as a joint venture in partnership with others. There is a range of approaches to ensuring the availability of digital content across the curriculum, from an essentially market-based approach to a more Government-led one. There are strong arguments for several of these approaches reflecting different views of the likely future development of the emerging digital content market. This paper seeks the views of industry and the education service about the best way forward.

2.1. Fundamentally, the use of ICT in schools matters because it can play a key part in transforming standards of education and in preparing young people for the world of work and for an active role in society. There is evidence that, used effectively, it can have a particularly beneficial impact on those from disadvantaged groups who have historically underperformed. It is critical that all schools are able to make good use of ICT, so that it is not only those who currently have knowledge and resources at their disposal who benefit from it.

2.2. The evidence of the impact of ICT on standards in schools is strengthening all the time. Work by the British Educational Communications and Technology Agency (Becta) shows strong positive correlations between achievement at 11 and the quality of ICT provision in schools, and similar correlations are emerging in the early years of secondary education. A Keele University study in 1997 showed how ICT in education can motivate the unmotivated, and that even those who described school as 'dull and boring' often found lessons using ICT interesting.

2.3. But ICT can do more than motivate and empower. It has the potential to transform the way education is delivered and to provide new opportunities, enhancing scholarship and investigation – providing greater context and detail and adding to what pupils learn from books. For example, multimedia presentations used effectively by a skilled teacher can greatly enhance the value of existing materials in the classroom and improve the effectiveness of lessons. Achieving high standards for all means greater tailoring of education to the talents and aspirations of individual pupils. And as the recent Green Paper "Schools: Building on Success" sets out, ICT is a key enabler of this more individualised education.

2.4. The implications are far-reaching. A wealth of subjects, once restricted to the minority, can be made available to all, as the pilot Key Stage 3 courses in Latin and Japanese described in section 3 demonstrate. There can be greater flexibility in the classroom to address the talents and aspirations of all children, and teachers will be able to use a broader range of teaching models to respond to the differences between individual pupils in their classroom.

2.5. We are moving from the world of the blackboard, overhead projector and traditional schools television to a world where the interactive whiteboard in the classroom complements desktop and laptop computers at school, at home and in the library. This is a world where effective use of high quality, digital interactive materials can focus the curriculum on the talents and abilities of the individual pupil. It is one where teachers can tailor resources to their own lesson planning much more effectively than has ever before been possible.

2.6. At the same time, we must enable and train teachers to show pupils when it is most effective to use new technology, and when the traditional tools may be more relevant. Information and Communications Technology is being introduced not as an ad hoc addition but as a carefully thought through contribution adding real value to more traditional teaching methods.

3. The National Grid for Learning

3.1. The National Grid for Learning programme has allowed real progress to be made in using ICT to raise standards in schools. Since its launch in 1998, work on NGfL has been taken forward in four key areas:

- Connectivity – ensuring that all schools are connected to the Internet in a way that enables them to use available materials effectively.

- Infrastructure – providing the equipment in schools to enable teachers and pupils to use ICT to raise standards.

- Teacher training – to provide teachers with the skills to use the available resources.

- Content – ensuring that there are sufficient high-quality digital resources available to support teaching and learning in schools.

Connectivity

3.2. In April 1998, only 6,500 schools were connected to the Internet. By 2000, 20,200 were connected, comprising 98% of secondary, 86% of primary and 92% of special schools. On average 60 computers were connected to the Internet in secondary schools, compared to only 27 just a year earlier. And the average number connected in primary schools also more than doubled over the same period.

3.3. At the same time, the speed of connection that most schools experience has also increased. In 1998, only 26% of secondary schools and 8% of primary schools had any connection faster than a modem over an ordinary telephone line. By 2000, this picture had been changed dramatically, with 77% of secondary schools using an ISDN line, and 32% having a connection faster than that.

3.4. In addition, the Department is funding Regional Broadband Consortia to procure broadband telecoms services, bringing together Local Education Authorities to achieve economies of scale from buying services together and to promote learning through broadband content. The minimum threshold of access to ICT for August 2002 means that at least 20% of schools in each area should be connected at broadband level.

Infrastructure

3.5. There have also been very significant gains in the infrastructure in schools. In 1998, there was one computer for every 17.6 pupils in primary schools and one for every 8.7 secondary pupils. By 2000, these figures had improved to one for every 12.6 primary pupils and one for every 7.9 secondary pupils. We have set a target of a computer: pupil ratio of at least 1: 8 in primary schools and 1: 5 in secondary schools by 2004.

3.6. Schools are making use of infrastructure funding to buy a variety of digital devices for the classroom, including for example interactive whiteboards. In addition, significant steps have been taken to provide teachers with computers as a key tool of their profession. Nearly 50,000 teachers and heads have received support for personal access and we recently announced a further £50m investment. This is providing a crucial stimulus to the use by these teachers of ICT in lessons and in the curriculum. The DfEE has also provided some funding to the e-learning foundation set up to provide laptop computers (or other portable devices) for children, particularly in disadvantaged areas.

3.7. In total, some £650 million is being invested between 1998-9 and 2001-2 in order to build an infrastructure which assures quality access for students and teachers and enables effective links with the Internet. A further £710 million has been announced for 2002-4 to ensure that the targets for improved infrastructure are met.

Teacher training

3.8. To date, some £230 million has been made available through the New Opportunities Fund to provide teachers with access to high quality training in the use of ICT within the curriculum. The programme offers teachers some 38 hours of face-to-face and online training to develop skills in using the technology to raise standards. Over 200,000 teachers have already registered for this training, and some 74,000 have completed it. This volume of training is far greater than any previous programme of professional development in ICT and is raising confidence and competence across the system.

3.9. As the first step in developing the next phase of our programme to help teachers use ICT effectively in the classroom, the DfEE will be running a competition for the development of on-line teacher training in the use of ICT in subject teaching. The pilot project will support literacy and numeracy in primary schools, and selected subjects of the National Curriculum in secondary schools. We are committed to ensuring that this programme delivers consistently high standards of training.

3.10. The provision of support for teachers and heads to obtain their own computers has been another important part of building teacher competence and confidence.

Content

3.11. A considerable amount has also been done to promote digital content. Already, the online NGfL portal provides a link to a wide and ever-increasing range of information advice and learning resources. At around 280,000 indexed pages on the main NGfL servers and considerably greater volume of associated material, the NGfL site is the largest educational portal in Europe.

3.12. In addition, a wide variety of innovative work is in hand to develop effective digital content. The DfEE is piloting whole courses in maths, Latin and Japanese at Key Stage 3 for 11 and 12 year olds. These will be interactive and suitable for use in school and at home. Contracts have been awarded to 3 companies and the courses are now underway in 60 schools.

3.13. TeacherNet has also been established, providing a gateway to a variety of resources across teachers' range of responsibilities. It will make new resources easily available to teachers, encouraging them to publish and take ownership of online materials, thereby to help to improve their quality and relevance to teachers' needs. 1,000 lesson plans and linked resources have now been made available on the site.

3.14. There is considerable ongoing work to promote and develop flagship, innovative learning facilities on the NGfL. GridClub, an educational and fun site for 7-11 year olds, was launched at the beginning of 2001, aiming to attract young people to learning (both in and out of school). All games and activities are linked to the National Curriculum, helping to raise educational standards and encouraging young people to become more familiar with ICT.

3.15. In March, the Department for Culture, Media and Sport launched its vision for Culture Online, which aims to use digital technologies to build a bridge between learners of all ages and the rich resources of the cultural sector. It will support education and provide materials and services to enrich and support the curriculum through the NGfL.

4. Developing the NGfL Programme

Developing digital content

4.1. It is critical that the NGfL is regularly updated to take advantage of the potential of rapidly developing technology. For example, the opportunity broadband delivery offers for richer and more interactive content to be delivered over the Internet can significantly enhance the educational value of materials delivered online and hence the potential to learn from them. And much smaller and more portable digital devices can significantly increase the opportunities for students to have access at home to the online educational materials they use in schools.

4.2. We are continuing to develop and update the National Grid for Learning programme in each of the four key areas described above to take advantage of the increasing potential of the use of technology in education. Within available resources, each of these key areas must develop in parallel with the others if we are to achieve our ambitions for the use of ICT in schools.

4.3. It is now important that major gains in infrastructure and connectivity in schools should be matched by similar gains in the use of digital content in the classroom. If the future potential of ICT to transform education is to be realised, then it should be straightforward for a teacher who is preparing to teach a new topic to find electronic materials that will enable him or her to deliver the lesson as effectively as possible. There should be materials that can be used for whole class teaching, for small group and individual work, and materials suitable for different ages and abilities across the whole curriculum. These need to be easy to find and to use and easy for a teacher to adapt to his or her own purposes.

4.4. Effective teachers, planning in advance with support staff, should be able to ensure that a whole range of materials, whether digital or paper-based, is available to their pupils through libraries and resource centres, which will be wired up to support teaching and learning. Pupils should be able to access the most up to date and relevant material from around the world to support their projects, and increasingly to produce highly professional presentations as a result.

4.5. This points to a future in which digital resources cover the whole curriculum and are available online to all schools. At present, although there is a substantial quantity of digital material online, there is evidence of significant variation in quality and evidence that teachers find it difficult to locate the best material.

4.6. In the light of this, we have already taken a number of important steps. We commissioned a major study of the future development and financing of the National Grid for Learning, looking particularly at the online NGfL portal as well as at connectivity for schools. The study was carried out by N M Rothschild and its conclusions are

summarised at Annex A. It suggested that the NGfL portal should play an important role in helping teachers to find and use high quality digital resources. It recommended that the DfEE seek partners to develop the portal, both to make its existing content as useful and usable as possible, and to develop new content and services to benefit the education service. We wish to take forward these recommendations for the NGfL portal.

4.7. Secondly, we have developed proposals for a 'Cybrarian' – a digital librarian to help learners to find the content that they need. It will help those with low literacy, without advanced information handling skills, with special educational needs or with visual impairments, including by the use of speech recognition software, and provide access to electronic resources that are difficult or impossible to access through electronic search engines. We are now taking this project forward, backed by the investment of £22.5 million, including £17.5 million from the Capital Modernisation Fund, and as part of this seeking private sector partners to help us to realise this exciting and innovative vision.

4.8. Third, we have carried out a competition for the provision of six digital GCSE courses, in mathematics, English, science, French, history and geography, to be provided over a range of channels. The competition operated on the same basis as that through which we procured the Key Stage 3 pilot courses, and has now been concluded. On the basis of criteria including the educational merits of the proposals and value for money, Granada and the BBC were successful, subject to necessary DCMS approvals. The provision of these materials will be a major step forward in the provision of digital resources to schools, and will stimulate demand for further materials to be made available across the curriculum.

4.9. We now wish not only to take forward our work in these areas but also to push further the provision of digital content for teachers and pupils to support learning across the curriculum.

4.10. We therefore want to consult on ways of making easily accessible a large volume of content, covering the whole National Curriculum; and ways of assuring the quality of that material. In addition, we need to ensure that the content that is available is delivered in such a way as to form a coherent whole, so that in future teachers can be sure that different materials will fit together effectively and will meet common standards.

4.11. We are calling this vision of a set of high quality resources across the curriculum, distributed as a coherent whole across a range of channels 'Curriculum Online'.

5. Curriculum Online – a Vision of the Future

5.1. Government has laid some important foundations. It is now critical that we work in partnership with others, not only to provide the necessary investment, but also to take full advantage of the range of skills and resources that exist in the public and private sectors. There are several possible options with the potential to achieve our vision, all involving major opportunities for the content industry and the UK economy.

5.2. We recognise very clearly that what we are proposing here is not a replacement for traditional and tried teaching methods, but should be integrated with them. New forms of accessing information, great works of art, sources of knowledge and imaginative ways of presenting traditional facts, are complementary to, rather than a replacement for, the critical core skills on which we have placed such emphasis.

5.3. We will need to build up towards this ambitious vision over a period of time and even once a broad range of material is being delivered effectively to schools, the material will need to continue to progress in order to move with the times. It must be provided cost-effectively, complementing existing work to raise standards and extend opportunity. But if it is to fulfil its function of raising standards across the education service, then two key components must be developed as soon as is practical:

- A distribution system, which includes a national broadband portal, but delivers content coherently to home and school over a multiplicity of channels, including digital television.

- High quality content covering the whole National Curriculum.

5.4. The key question is how best to establish these two components. There is a variety of possible options, and it is critical to choose the approach that maximises the net benefits to the education service as a whole whilst protecting the wider economic interest. It is also important to recognise that there is potentially a very substantial international market for these materials, and that proposals should be developed which take advantage of this market.

Distribution

5.5. The impact of any digital material will be dependent on the effectiveness of its distribution to teachers and pupils at home and in school. If the distribution is to be effective, then it must be:

- Accessible: So that content is easily available as a whole and easy to use at home as well as in school.

- Multi-channel: So that materials can be used by teachers and pupils over the Internet using PCs and Interactive whiteboards, for example, but also over Digital Television.

- Open: So that the platform is neutral between content producers, all producers can use it as a route to market and schools can access all materials of an appropriate standard in one place.

In addition, there may be a need for a distribution service to provide some support for schools in the use of the materials.

5.6. There are broadly two approaches to securing the effective distribution of digital materials. The first would be to pursue an essentially market-led approach. The alternative would be for Government to take a more active role in procuring a distribution system.

Distribution without Government involvement

5.7. If there is no Government intervention to establish a distribution system, then it is likely that, for the foreseeable future, there would be a wide range of content producers supplying their material through a range of different channels. In many cases, this would mean that producers would offer their material online through their own websites.

5.8. This would have the benefits of ensuring competition in the distribution of material as well as in its creation and of creating a diverse range of suppliers, each seeking to meet the needs of teachers, pupils and parents. These factors would provide incentives for distribution systems to continue to innovate and to focus on the needs of customers.

5.9. However, this approach would also be likely to mean that individual content producers would make their materials available only through their own distribution systems, and that therefore it would remain difficult for users to find the materials they want. Users would also have difficulty in assuring themselves of the quality of what is on offer, and in comparing different products from different suppliers. One effect of this could be that the market is harmed, as fewer people purchase digital content than would be the case if they could easily find what they want, compare competing products and assess their qualities.

Government involvement in distribution

5.10. There is a potential role for Government in resolving the current difficulties for schools in finding and using online materials. If a distribution system can be established that makes it significantly easier for teachers, parents and pupils to access digital resources and increases their confidence in its quality, then this could significantly increase the use of digital materials in schools. Such a system would need to build trust, by securing standards as a criterion of entry, by scrupulous neutrality in its handling of different content providers and by offering an effective guide to the resources that are available. Government can play an important role in this as a neutral guardian of standards, and as a trusted support in creating a marketplace.

5.11. The system would need to involve delivery over a range of channels, but an important component of the system would be a broadband portal, developed as a portal of choice for the schools community, widely recognised as a natural place from which to obtain digital materials. We believe that, suitably revamped, the NGfL portal can play an important role as this trusted and independent site. The Rothschild study recommended that the DfEE seek partners to help to develop the site and brought forward proposals for its development, including:

- The restructuring of the NGfL portal to provide personalised content organised by key customer group (teachers, parents and pupils, for example), with both national and local level material.

- The development of the materials currently available through the portal, to provide a comprehensive information service for education.

- The development of an e-procurement service for electronic content. As part of this, the DfEE would help to create a market using funding for digital resources available at local level which could then be used by schools within the portal – in the form of 'electronic learning credits'. This would increase the amount of digital content used in schools, achieve economies of scale and provide revenue to support the portal.

- An independent guide to content, designed to help teachers, parents and pupils to find what they need quickly and to have confidence in its quality.

- Potentially, the development of a range of further services to benefit the education community.

5.12. The electronic learning credits would play an important role in creating this portal as the preferred marketplace for content. A proportion of the Standards Fund money that schools receive is already designated for content purchase. This money could be held within the portal in the form of credits for use by each school for purchase of content through the portal. This would provide a strong incentive for schools to use the portal and a strong incentive for content producers to make their material available there. It would also help to create a revenue source to make the portal a viable business.

5.13. This approach would mean that a portal would be created meeting many of the requirements to be the basis of the distribution system. It would be neutral between content providers, would provide an independent guide to content, could set standards and would promote competition by making it simple to compare products. It would also make it simple for content creators to bring their products to market, knowing that they could reach a large audience easily. It could quickly become a natural first port of call for digital education resources.

5.14. There are several options for establishing this system. The Government is particularly interested in establishing it as a joint venture by seeking partners to help to establish it, as set out in the Rothschild report. The Government would then share in any return on its investment.

5.15. We would welcome views on this approach.

Content

5.16. Distribution is critical to our vision, but making sufficient content available through the distribution system is also vital. If our vision is to be turned into a reality, then there must be a set of resources that are:

- Comprehensive: Covering all the National Curriculum subjects, all ages and all abilities.

- Coherent: So that the available materials work together effectively.

- Individualised: So that materials are available that can be tailored to the individual needs of each child.

5.17. This is not to say that the materials that comprise Curriculum Online must be provided or even commissioned by one organisation. Whether or not one organisation was responsible for commissioning a significant volume of material covering the curriculum, the expectation would be that materials from a variety of producers would be available. The development of these resources provides a major commercial opportunity for the content industry and we are committed to seeing a range of producers involved.

5.18. The DfEE has already made important steps forward in the provision of digital content for schools, not least through the competitions which have led to the GCSE and pilot Key Stage 3 courses described above. Making these courses available to schools will have a significant effect in strengthening demand for more digital materials across the curriculum. The next challenge is to find the best route for building on this to ensure that schools have the materials they need across the curriculum.

5.19. There are several possible options for achieving our Curriculum Online vision. There are clear benefits to a competitive market, which need to be preserved. At the same time, there is a need for materials that cover the entire curriculum and for coherence and consistency across the curriculum. It is also important to secure value for money for the education service as a whole and to make digital materials available to schools as quickly as possible within available resources.

5.20. Since the market remains relatively young, it is difficult to assess which approach would be the most successful, but in the spectrum of different options, it is possible to identify three broadly different approaches, each of which could be combined to a greater or lesser extent with the others:

- **Stimulating the market.** The Rothschild proposals, including the idea of ring fencing funding within the portal for electronic learning credits, would be used as a means of pushing the market.

- **Procuring content.** Along with other major players, we would fund the development of content across the curriculum as resources allow and to an agreed quality standard. In addition, the market would be further stimulated through the Rothschild proposals as described above.

- **A lead content commissioner.** On this model, the DfEE could establish one or more lead organisations with responsibility for commissioning content across the curriculum. Again, the market would be further stimulated through the Rothschild proposals.

5.21. In the light of the BBC's recent consultation on its proposals for a digital curriculum (under which one model has been worked up jointly with Granada), the role of the BBC in each of these options is a further important issue discussed below. The options set out below are not wholly distinct, and in practice a 'mixed economy' may be needed, but they broadly set out the different possible approaches.

5.22. Under the option of stimulating the market, the Rothschild proposal for electronic learning credits for e-procurement of digital content within the NGfL portal would be the main stimulus to the market. This should increase demand by ensuring that schools purchase content using the funding they receive, and should provide a marketplace to encourage competition by providing an e-procurement hub that enables schools to choose between the full range of available materials. Government would not seek to procure content, and there would be no lead provider.

5.23. The key advantage of this approach would be to preserve and extend competition as a means of providing choice for schools, promoting innovation and improving service and value for money over time. It would probably deliver a considerable diversity of provision, with the advantage that material is available meeting a wide variety of learning styles.

5.24. However, potential disadvantages of this diversity are that it could prove more difficult to achieve coherence of content across the curriculum, and might increase the difficulty for teachers in finding and using the resources they want. The Rothschild proposals for a guide to content would help to meet this problem, but Government would also need to examine ways of setting standards across the curriculum.

5.25. A further risk could be that, although a considerable amount of material might become available in the core National Curriculum subjects, comparatively little provision might be made for minority subjects if the return on investment for minority subjects were insufficient to justify the costs of content development. Central Government intervention would then be required to procure material to address gaps in provision.

5.26. Under the Government procurement model, the Rothschild proposals could still be developed as stimulus to the wider market. In addition, the Government would seek to procure from content providers material to cover the curriculum. This could not exhaustively provide all the materials that schools might want, but would offer resources to support the teaching of each National Curriculum subject across the age and ability range.

5.27. This model should have the advantage of encouraging coherent offerings covering the whole curriculum. If it represented good value for money, upfront Government investment would also probably increase the speed with which materials were made available and would mean that materials were provided to schools free of charge, probably significantly increasing uptake in the classroom. The DfEE would need to take an active role in assuring the quality of content and would need to develop a clear policy for refreshing materials over time.

5.28. Even though the DfEE would ensure that a range of suppliers provided materials, there would be a risk that this approach would reduce diversity of provision and reduce competition. The Rothschild proposals would counter that risk at least in part, since they would mean that significant resources would be available to schools to use for the purchase of content in the form of electronic learning credits. Schools would inevitably use these for content other than that procured by the DfEE (which would be free to them).

5.29. Although this should preserve a significant degree of competition, the DfEE would need to find ways of building in incentives to those who provide the centrally procured materials to ensure that these continue to be developed and extended to meet the demands of customers.

5.30. This model would involve establishing a lead content commissioner with responsibility for procuring a range of materials as in the Government procurement option. Many of the advantages and disadvantages of establishing a lead commissioner are similar to those of the DfEE taking the lead in commissioning content. One advantage of the alternative approach would be to take advantage of the skills of a content producer in commissioning and providing material. Establishing a lead provider and commissioner would also make it more straightforward to achieve coherence and common standards across the curriculum.

5.31. A disadvantage would be that other producers of content would be concerned about the position of the lead provider and its potential monopoly in the provision of the curriculum. This could be addressed at least in part by requiring close working with the DfEE and requiring a high proportion of the materials to be commissioned from other producers. Other measures could include ensuring that producers retain intellectual property rights when their material is commissioned and ensuring that they are able to brand the material they produce.

5.32. A further key issue is the role of the BBC. The BBC has a celebrated history of involvement in education, which it is committed to maintaining, and the Government has made clear its hope and intention that it will do so. As a public service broadcaster funded through the licence fee, the BBC is uniquely placed, and in his announcement of the level of the licence fee over the next seven years, Chris Smith identified educational provision for schools as one of the priorities.

5.33. The BBC has recently consulted on its proposals for an online digital curriculum, including the investment of some £130 million. Such a new service would require the approval of the Secretary of State for Culture, Media and Sport, and this would only be considered following a process of consultation with others in the industry. A key criterion would be whether this service represented a valuable public service for licence fee investment.

5.34. The potential advantages of this level of licence fee investment to the education service as a whole are clear, including the rapid injection of new content focused first on subjects where there is educational need. In accelerating the development of content, the BBC could be a significant contributor in partnership with other major providers, making use of its archives, its considerable experience in producing educational materials and its expertise in developing online materials. Working in partnership with Granada Media, it will also be developing digital GCSE courses as a result of the DfEE's educational broadcast competition. The BBC's public service remit could also make it possible for services to be provided universally, which would otherwise be uneconomic

5.35. These advantages would need to be balanced against the risks to the market if there were heavy licence fee investment. Major licence-fee funded investment in content could have a significant impact on other players, and there would be a danger that there could be reduced competition and investment by other organisations if the proposals went ahead. Options for mitigating these risks could include a requirement that the BBC commission a majority of its material from other producers, and careful handling of intellectual property issues. Clearly, there would need to be an expectation on this model that the BBC would work in partnership with others.

5.36. However, the BBC could play a major role under any of the main options for content development described above. It could act as an important producer of content in the market or under the procurement options. It could also act as the lead content commissioning body, working in partnership with other major content producers, on a model close to its original digital curriculum proposals. However, we are also aware of concerns expressed by the wider content industry about its involvement.

5.37. In a relatively young market, it is more difficult to assess the direction of market development. Arguments are strong for all of the approaches described above, and the Government would welcome views on the most appropriate approach.

5.38. These different approaches to content development give rise to two different approaches to procuring the delivery of Curriculum Online as a whole. These are:

- Procuring it as a whole, both the content and a delivery system which includes the Rothschild recommendations.

- Separating content from delivery.

Summary of the Rothschild recommendations

5.39. The first option, of procuring the whole at once would ensure that digital resources were made available across the curriculum, forming a consistent whole and delivered effectively. However, it could require large consortia to be put together if, for example, all of content creation, distribution and e-procurement are to be provided together. This could increase the complexity of the task.

5.40. A critical issue would be ensuring the neutrality of the distribution system if one of the partners in a consortium that won the tender were a major content provider. If Government were to take a stake as a joint venture partner, then this could help to ensure neutrality, and the independence of the guide to content would also ensure some neutral advice. Major producers of content might nonetheless be unhappy to distribute their material through a vehicle part owned by another content company unless other safeguards could be put in place which offered certainty that all material would be equally accessible.

5.41. Alternative approaches would involve looking separately at content creation and at distribution. This would help to secure the neutrality of the distribution system, and would enable the Government to be involved in content and distribution in different ways. For example, it might be that Government would wish to fund the development of content, but to take a stake as a Joint Venture partner in a distribution system. Separation of content and distribution might, however, make it more difficult to deliver an integrated service to the user.

5.42. The Government believes that it should have a role in the development of a delivery system, either through procurement or as part of a Joint Venture, but in either case retaining some influence over the system to ensure neutrality. However, separation of content from distribution offers a range of choices for ensuring that content is in place, and the advantages and disadvantages of the different options are discussed in the content section.

5.43. We would welcome views from industry and from the education sector on the options set out in this paper.

Overview

A.1. This annex summarises the recommendations of work carried out by N M Rothschild on the future development of the National Grid for Learning. The Government is considering these ideas and would welcome views about their advantages and disadvantages from consultees.

A.2. The report provides Rothschild's views on the future development and financing of the National Grid for Learning – focusing on content and connectivity. In summary the proposals involve an active Government role in three areas:

- Launching a national public private partnership (PPP) to build on existing DfEE and NGfL web sites and create the education portal of choice for all schools in England.

- Regulating the ISP market to ensure the delivery of a high quality Internet network for all schools, whilst retaining the benefits of competition in the sector.

- Procuring local access telecom infrastructure nationally. The cost of this would be substantial.

A.3. The report argues that teachers, pupils and parents face problems in locating high quality learning resources online. This partly reflects the fact that the development of online content is still in its infancy. But in addition, the nature of the content and the amount of information available through the Internet makes finding the right resource difficult. So a single portal of choice – which acts as an intermediary – is essential to allow teachers, pupils and parents to make use of online resources for raising standards.

An Education Portal PPP

A.4. The development of an education portal of choice should build on the existing base of content developed for the NGfL and DfEE schools web sites. But the report argues that the functionality and information management necessary points to the DfEE seeking to do this in partnership with the private sector. This is not primarily about levering in private investment, since the total investment is likely to be relatively focused. Rather it is about ensuring that the Government has access to the right skills and expertise and that the organisation that manages the portal has the ongoing incentives to maintain and improve the functionality it offers to its users and to encourage content delivery from all sources.

A.5. The report therefore proposes that the Government launch a national public private partnership (PPP) to create the education portal of choice. The portal would provide a range of education services to schools, school managers and governors, teachers, pupils and parents enabling them to make better use of Government and private sector content to improve standards, generate savings through e-procurement, and promote the use of ICT through learning communities. A key feature would be the development of an Independent Guide to electronic content to ensure that parents and teachers can easily assess the quality and the appropriate use of electronic material. In addition the portal would combine nationally created and managed material with local / personalised material.

A.6. Modelling suggests that there is a business model that would be attractive to potential partners – based on an innovative use of existing Standards Fund resources for electronic content to create "Electronic Learning Credits" which can be used only within the portal to buy electronic content. A Joint Venture structure would mean that Government would share in any return and allow some degree of regulation of the business aims.

Regulating the ISP market

A.7. The report recommends a continued competitive market for Internet Service Provision. However, in order to deliver a national Internet network to all schools, Government should define standards and regulate Internet Service Providers (ISPs). This will ensure that schools all have high quality access to online content and applications such as video-conferencing.

A.8. NGfL or "Education" ISPs would be required to:

- Deliver quality of service to schools – both in terms of technical standards and minimum services offered. Education ISPs should be required to offer safe home access to the filtered school environment at no additional cost to the student.

- Operate using agreed Internet Protocol ("IP") technology standards and peer with all other education ISPs at a specified location. This requirement will ensure that a national IP network will be available to all schools. The report recommends that Government works with the industry to establish a not-for-profit peering organisation to be owned by all Education ISPs.

A.9. Becta should be responsible for developing and monitoring these standards and the creation of the proposal Education peering company. The report recommends that the development be carried out in partnership with both the education ISPs and school and LEA representatives.

A.10. A number of LEAs (and some schools) currently provide their own ISP service. Such LEAs should be able to continue providing these services. However, Government should consider the possibility of requiring them to demonstrate delivery of the same service levels required of "Education ISPs".

A.11. This approach leaves schools and LEAs with choice, whilst at the same time ensuring a minimum quality of service. And the proposals do not destroy value but create an open market in which all ISPs can participate.

Procurement of telecom services

A.12. The report argues that the key issue for Government in the delivery of broadband to schools is the local access network rather than the national or regional networks. Analysis indicates that the local access network (i.e. the "last mile" from the school to an exchange or local presence of fibre) is the most expensive part of the network as a whole.

A.13. The analysis suggests that in the medium term and in most areas, fibre is the most cost-effective means of achieving the bandwidth that schools will need to be able to deliver broadband to the classroom. Nonetheless, if by 2005 secondary schools were to use 34Mb/s and primary schools 8Mb/s, the annual cost could be very substantial.

[1] Peering involves the creation of a direct, high-speed link between one or more ISPs. This increases the efficiency and reliability of information transfer between ISPs.

A.14. In order to tackle this, the report proposes developing national framework contracts with the main telecom companies for the provision of a high bandwidth local access network. The basic features of the proposal are as follows:

- Telecom operators will be asked to quote for the delivery of managed telecom services connecting all schools in each LEA to a neutral, local concentration point. For each LEA, operators will be required to offer price points for different levels of bandwidth. These price points will be binding for the length of the contract (3 to 5 years) and will be subject to benchmarking.

- As part of the contract – in order to prevent the creation of monopoly suppliers in each region – the Government will acquire the irrevocable right to use the fibre. This means that the 10 year cost will include the purchase of the basic infrastructure – which will be curable to schools for a further 5 to 10 years.

- The successful telecom operator in each LEA will be required to offer these managed services at the agreed price on a non-discriminatory basis to any Education ISP or the LEA. Schools will then purchase connectivity services (including the use of the telecom infrastructure) from education ISPs.

A.15. Three important features would need to be built in to the contracts. First, funding for the contracts should be structured so that the prices faced by schools in different locations is similar regardless of geography. Second, delivering a local access infrastructure offers the possibility of aggregating demand from other sources. Part of the attraction of the contracts to telecom operators should be the potential to use the fibre infrastructure for other customers in each area. Third, as part of the framework contract, Government should seek to negotiate free or preferential home access to a defined Internet education space (e.g. the Government's education portal, or a pupil's interactive school web page.)

A.16. We would welcome views on all of the report's recommendations.

We welcome your views of this Consultation Paper. Copies of the paper and the response form are available on the DfEE website at www.dfee.gov.uk. Alternatively they can be ordered free of charge by ringing 0845 60 222 60 and quoting references: DfEE COL/2001 for the paper and COLQUES/2001 for the response form, or by e-mailing dfee@prolog.uk.com.

You are invited to complete the response form online, return it by e-mail to Curriculum.Online@dfee.gov.uk or send it by post (including taped responses) to: Curriculum Online Responses, 1E Caxton House, Tothill Street, London SW1H 9NA.

Tel: 0207 273 4995 (response form queries only)

Fax: 0207 273 4991

Under the Code of Practice on Open Government, any responses will be made available to the public on request, unless respondents indicate that they wish their response to remain confidential. The consultation period runs until 1 July 2001.

Curriculum Online –
a Consultation Paper

NGfL
National Grid for Learning

DfEE
Department for
Education and Employment