

VI The relevant markets

6.1 This section sets out PwC's view on the definition of the relevant market(s) in which the BBC's proposed Digital Curriculum service would operate. We assess the scope and nature of the relevant product and geographic markets. As noted in Section III, we rely on qualitative evidence to inform our conclusions on market definition, due to the lack of quantitative evidence available.

Summary conclusion

6.2 We conclude that the relevant markets for the BBC's proposed Digital Curriculum service can be grouped at least as wide as the:

- Provision of educational software resources to formal learning environments (e.g. schools) in the UK;
- Provision of educational software resources to informal learning environments (e.g. homes, libraries) in the UK; and
- Production of educational software content (and related services) in the UK.

6.3 We recognise that there is evidence to support the widening of the first two groups of relevant markets to include educational printed resources. We do not rule out that in the future, online provision may develop in form, acceptability and accessibility to become a stronger substitute for educational printed resources. Given the current evidence, however, we cannot support such a finding at this stage of market development. It should also be recognised that a relevant market definition for competition law purposes could vary according to the context of the particular investigation.

6.4 We discuss each of these relevant markets in the paragraphs below.

Provision of educational software resources to formal learning environments in the UK

6.5 Teachers choose a combination of educational resources to deliver the curriculum to his or her pupils⁶⁵. The purpose of the BBC's proposed Digital Curriculum service is to satisfy, in part, the demand from teachers for different types of teaching resource.

6.6 We define the term 'formal learning environments' to refer to schools. 'Informal learning environments' refer to places of study outside of schools such as the home, and the library. As noted in Section IV, we define the term 'educational resource' as a product/service that contains educational content that can be used for teaching/learning. It encompasses products such as textbooks, television programming, CD-ROMs and other PC-accessed material (e.g. online sites, satellite delivered content). We define the term 'educational software resource' to refer predominantly to CD-ROMs and online resources. We define the term 'educational online resources' as a product/service delivered via the internet that contains educational content that can be used for teaching/learning⁶⁶. In contrast, 'offline educational resources' refers to product/services that are not delivered via the internet such as textbooks and CD-ROMs.

6.7 This assessment begins with a consideration of online provision and systematically examines the evidence for a wider product market definition. This is followed by an assessment of the potential geographic market definition.

⁶⁵ As noted in Section IV, teachers demand for educational resources derives from their interpretation of the needs of end-users (i.e. learners).

⁶⁶ As explained in Section IV, the VLE used by the Digital Curriculum service is an integral part of the BBC's product for schools. Without the VLE, the BBC would just be supplying a mass of educational content. The BBC has informed us that several major commercial suppliers also supply an iLMS in conjunction with their educational content. We cannot at this stage define a separate market in relation to the provision of a VLE or iLMS more generally. However, should the nature of the product change we would review this preliminary conclusion.

Product market

Demand side substitution

6.8 In order to assess the degree of demand-side substitution we examine four key factors:

- substitutability within an online course i.e. the extent to which teachers/pupils view different parts of a course as being substitutable for each other;
- substitutability between online courses i.e. the extent to which teachers/pupils view different online courses/subjects as being substitutable for one another;
- substitutability between educational online resources and other educational software resources i.e. the extent to which teachers/pupils view, say, online provision as being substitutable for CD-ROMs; and
- substitutability (and complementarity) between educational software resources and educational printed resources i.e. the extent to which teachers/pupils view software resources as being substitutable for, or complementary with, printed resources.

Substitutability within an online course

6.9 At the lowest level of granularity, the BBC would be providing specific parts (i.e. learning objects) of educational courses in an online format. In some respects each learning object is a distinct product in itself. Teachers have very little flexibility to pick and choose which learning objects to teach their pupils.

6.10 However, in practical terms there is a degree of demand-side substitutability for online service offerings for each subject. If the relative price of learning objects provided by one online supplier increases, teachers are highly likely to seek the services of an alternative (online) educational resource supplier or use the time allocated for ICT learning to teach a different learning object.

Substitutability between online courses

6.11 It could be argued that there are a large number of separate subject-specific markets in which the BBC's proposed Digital Curriculum service would operate, ranging, for example, from Key Stage 1 mathematics to GCSE economics. However, in taking a view on the optimum usage of educational online resources, teachers exert a degree of demand-side substitutability for most courses that are provided online. The generic ICT skills developed by pupils are transferable across subjects. Hence should the price rise, or quality decline, for any given online course relative to another, there is little to prevent a teacher from switching ICT lesson time to teach the other course(s). This is compounded by the fact that there is no obligation for teachers to use online resources for the majority of courses/subjects.

6.12 Nonetheless, we recognise that some subjects are more suited to online learning. ICT is used for a wider range of subjects in Secondary Schools than in Primary Schools reflecting the greater variety of subjects in the former and the focus on numeracy and literacy in the latter⁶⁷.

Substitutability between educational online resources and other educational software resources

6.13 The services offered by CD-ROMs and other forms of educational software (for example content dispatched to computers via satellite) provide considerable scope for substitutability in schools with educational online resources.

6.14 A key similarity between educational online resources and CD-ROMs is the method of viewing – both typically via a PC screen. By implication, there is a need for the user to become PC literate in order to maximise the effectiveness of both forms of resource. CD-ROMs can also provide similar levels of functionality and interactivity as educational online resources⁶⁸. Much of the content is also the same and both resources can contain 'links'. It is also noteworthy that there is a general recognition that the

⁶⁷ A recent survey by the DfES found that the usage of ICT varied considerably between different subjects. 50% or more of survey respondents reported that they made substantial use of ICT in science, mathematics, English and information technology in primary schools. For secondary schools, 50% or more of those sampled reported that they made substantial use of ICT in science, mathematics, information technology, geography, English and design & technology.

⁶⁸ Indeed, the drive for interactivity and more engaging learning were two of the key factors that educational CD-ROM suppliers used to differentiate their product from educational printed resources.

usage of CD-ROMs in schools will decline as the online medium develops.

6.15 However it should be noted that unlike the online medium, CD-ROMs are more capacity constrained and less conducive to replication in the classroom and translation to the home. In the long run, online provision is the most cost effective option for delivering content since it has the greatest potential for economies of scale and scope.

Substitutability and complementarity between educational software resources and educational printed resources

6.16 The definition of the relevant market is not straightforward in many situations where new products/services are offered as complements as well as substitutes. The BBC’s proposed Digital Curriculum service would supplement and provide complementary benefits alongside traditional ‘offline’ educational resources.

6.17 The different intended use and product characteristics of three types of educational resource are summarised in Table 2.

Table 1: Product characteristics of different educational resources

Learning resource	How used?	Typical (relative) usage in schools	Typical usage basis	Current (relative) level of interactivity
Printed	Book + teacher	High	One book per pupil	Minimal
CD-ROM, DVD	Mostly via PC	Low	Few CD’s per school	Medium
Online service	Mostly via PC	Low	One service for school	Medium (but great potential)

Source: PwC analysis

6.18 There is a much greater usage of textbooks in schools than software resources. The availability and accessibility to printed resources is also much higher. Nonetheless it is evident that the advantages of educational software resources when compared to printed materials include⁶⁹:

- a far greater degree of interactivity and multimedia functionality;
- access to a broader range of material;
- more interesting and engaging learning; and
- unique opportunities for self-learning (i.e. without a teacher).

6.19 Hence there is qualitative evidence to support a conclusion that educational software resources have different product characteristics and means of use when compared with educational printed resources.

6.20 We are aware that pupils learn in different ways and the optimal exposure to online learning resources will vary for each child. In preparing for a lesson, teachers typically select the optimal combination of educational resources, ranging from textbook work and class discussion to PC-based online activities. The traditional ‘teacher/textbook/blackboard’ method for teaching is still prevalent and is unlikely to be affected to any material degree in the short-term by any new online resource. This is no less the case for the BBC’s proposed Digital Curriculum service, in particular given its phased introduction over a number of years.

6.21 Since their introduction in schools, online resources have increasingly become more prevalent in terms of the time allocated to PC-based learning. Indeed, one secondary school teacher recently noted that:

“The internet is just another way of approaching certain topics. We use the library or textbooks and it’s just another way of working which is very useful and adds another dimension to what we are doing. It’s a very useful tool”⁷⁰

⁶⁹ We have been unable to make a comparison of prices for educational online resources and educational printed resources due to the difficulties of identifying and finding comparative information.

⁷⁰ “The Use of ICT in Schools, A Qualitative and Quantitative Survey of Teachers, Pupils, LEAs and Parents, Research Study Conducted for BBC Children’s Education”, MORI Social Research, 2001.

6.22 However, we do not believe that this statement necessarily implies that there is a strong degree of demand-side substitutability between educational online resources and educational printed resources. For example, in a recent report on technology in K-12 education in the more developed US market, David Thornburg wrote that⁷¹ :

“It is a mistake to think that new media displace old ones [teaching resources]”

6.23 Indeed, Graham Taylor, Director of the Educational Publishers Council, recently noted that⁷²:

“There is concern, especially among smaller publishers, that a shift to online may affect the demand for printed material. But history doesn’t back that up. And there will be new print publishing opportunities, as yet unrealised, with online in the classroom”.

6.24 A report commissioned by the BBC⁷³ concluded that the continued development of ICT is not expected to reduce demand for textbooks significantly in the short to medium term. It was estimated that it would take at least 8-10 years before ICT becomes ubiquitous in schools. Indeed, in a survey of publishers conducted by the DTI⁷⁴ , some 43% of respondents disagreed with the statement that electronic products would damage the sales of paper-based products. There will still be a strong demand for textbooks at least in the medium term although these may need to tie in more closely with educational online resources.

6.25 A relative decrease in the price and/or increase in the quality of online resources is unlikely to lead to any significant switching away from printed resources in the short term. However, in the medium-term as teachers become better trained and more confident in using educational online resources, so switching will probably become more likely.

6.26 The Government also noted in its Curriculum Online consultation paper that:

“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 facts are complementary to, rather than a replacement for, the critical core skills on which we have placed such emphasis.”

6.27 The relevant product market could be considered from a demand-side perspective as the ‘complementary’ service that educational resources provide. However the products are not ‘complementary goods’ in the purest economics sense. For example, an increase in the price of textbooks would probably not, ceteris paribus, lead to a fall in the demand for, say, CD-ROMs.

6.28 We have not explicitly discussed the role of educational television programming within our assessment. However, we do not believe that educational television programming is part of the relevant market. The product characteristics of the services are very different from educational software resources and it is unlikely that the prices charged are constrained to any material degree by the price of educational software resources.

Demand side substitution: Summary

6.29 We would currently group the product market from a demand side perspective as being at least as wide as the provision of educational software resources to formal learning environments, given the:

- cross-curricular nature of ICT learning;
- different product characteristics of educational printed resources and educational software resources;
- the absence of past quantitative evidence of demand-side substitution following changes in price or quality of educational printed and software resources;

⁷¹ “Technology in K-12 Education: Envisioning a new future”, David D Thornburg.

⁷² Press article supplied by the BBC, March 2002.

⁷³ “Commercial Opportunities for Education in the UK”, Spectrum Report April 2000.

⁷⁴ Taken from “Commercial Opportunities for Education in the UK”, Spectrum Report April 2000.

- the lack of evidence of potential demand-side substitutability at least in the short-term, exacerbated by factors such as the inadequate hardware and network provision in schools; and
- the fairly loose definition of ‘complementarity’ associated with the usage of educational resources.

6.30 We have not found any quantitative evidence to support the assertion that the prices of educational software resources are constrained by the prices of educational printed resources. Nor have we found any evidence of a ‘chain of substitution’ between educational printed and software resources.

Supply side substitution

6.31 In order to assess the degree of supply-side substitution we examine three key factors:

- substitutability within an online course i.e. the extent to which suppliers view different parts of a course as being easily substitutable in production;
- substitutability between online courses i.e. the extent to which suppliers view different online courses/subjects as being easily substitutable in production; and
- substitutability between different forms of educational resource e.g. the extent to which suppliers view, say, online provision as being substitutable in production for other resources such as CD-ROMs and textbooks.

Substitutability within an online course

6.32 There appears to be very little difficulty for an established educational online resource supplier to switch between the production of different learning objects within a given course. This applies to switching between material that is on the National Curriculum and material that is not. Assuming the pedagogical information has been sourced, the constraint on switching will be the extent to which certain parts of a course are compatible with an online format (e.g. the extent of interactivity available for different learning objects).

Substitutability between online courses

6.33 Given the understanding and skills required to produce a successful online course, there appears to be no major constraint on the transfer of this knowledge from one course to another. Whilst it will also be imperative to have a good knowledge of a course, we understand that it is fairly simple for suppliers to source the pedagogical information required.

Substitutability between different forms of educational resource

6.34 The educational software resource sector is much less mature than the educational printed resource sector. The supply of educational software resources is also typically characterised by lower marginal costs of production and profit margins when compared to the production of educational printed resources.

6.35 It is also apparent that CD-ROMs more closely resemble educational online resources than educational printed resources. Whereas textbooks are printed, linear and mostly text-based, educational software resources are designed to be far more interactive and graphics-based. This makes the degree of supply-side substitutability far greater among educational software resources than between software and educational printed resources.

6.36 The BBC is intending to licence unbranded content on commercial terms to third party suppliers of educational software resources in the UK⁷⁵. Subject to certain technical specifications, the third party supplier would be permitted to use the content for incorporation within CD-ROM products or online resources. This is further evidence of the ease of supply-side substitution between the different types of educational software resource.

6.37 There is evidence of diversification by suppliers from educational printed resources to the supply of educational online resources. However, this substitution is clearly not as simple as say, flicking a

⁷⁵ See paragraph 5.12 above.

switch on a machine to produce a different colour of paint or thickness of paper.

Supply side substitution: Summary

- 6.38 Our consideration of the scope for supply-side substitution broadly concurs with our preliminary findings based on demand-side substitution analysis. Indeed, the ease of supply-side substitutability within, and between, online courses, overrides any lack of demand-side substitutability.
- 6.39 We would currently classify the product market as being at least as wide as the provision of educational software resources to formal learning environments. We cannot widen the relevant market to include educational printed resources, due to the differences in the characteristics of production vis-à-vis educational software resources and the absence of quantitative evidence on past supply-side substitution between printed, CD-ROM and online resources.

Geographic market

- 6.40 Pupils are rarely constrained in their learning by geographical boundaries. The BBC's proposed Digital Curriculum service is intended to meet the educational needs of pupils and independent learners throughout the UK.
- 6.41 From a demand-side perspective, there is limited substitutability for some subjects between the nature of educational content demanded by teachers in the different nations of the UK. This is evident no matter what form the educational resource takes (e.g. textbook, online) because the differences originate from variations in the curriculum between nations.
- 6.42 A survey⁷⁶ of school curriculum variations across the UK noted that differences manifest themselves in subjects based on national history and culture (e.g. history, literature, the arts) and the devolution of national powers and responsibilities (e.g. citizenship and related studies). Furthermore, there is a demand for tailored content to meet the needs of Welsh speakers where English is not the first language. However, the report concluded that since there are sufficient similarities between the curricula and in most instances the national differences are only very slight, the joint production of educational online resources for the nations was entirely justified.
- 6.43 From a supply side perspective, most of the large educational resource suppliers are either UK-focussed (e.g. RM) or global in their coverage (e.g. Pearson). There is very little to stop educational software suppliers from servicing all of the UK. However whilst there is evidence of movement from overseas markets to the UK (e.g. Pearson), this is by no means simple given factors such as the differences in curriculum requirements between countries.
- 6.44 Based on the evidence we have collated, it is therefore reasonable to conclude that the relevant geographic market is probably at least as wide as the UK.

Provision of educational software resources to informal learning environments in the UK

- 6.45 Independent learners and school pupils would both have access to the BBC's proposed Digital Curriculum service at home. For simplicity we refer to the 'home' as a suitable proxy for the informal learning environment⁷⁷.
- 6.46 We recognise that some educational resources purchased in schools will be used in the home environment (e.g. for homework) and access to the internet at home will probably supplement a child's learning at school⁷⁸. In many respects out of school study complements the activities undertaken by pupils in schools (e.g. through homework and extra curricular learning). Indeed, the relevant market assessment for the informal learning environment is very similar to the analysis for the schools (formal) market.
- 6.47 However, there is little evidence of substitution between the home and schools markets for educational resources. We believe that separate markets exist for the provision of formal and informal educational

⁷⁶ "School Curriculum Differences across the UK", National Federation for Educational Research, September 2000.

⁷⁷ We recognise that this market is not confined to the home since other outlets (e.g. libraries) are used by learners for similar reasons.

⁷⁸ Indeed, schools are looking for ways to 'extend' the school day, which could involve selecting and packaging resources for home use.

software resources, since:

- the resources sold to informal learning environments are usually quite different to those purchased by schools⁷⁹. This primarily reflects differences in the nature of consumption. Resources designed for the latter should be conducive to whole class (multiple) learning whereas the former is mostly used for self-study. Hence there is probably scope for discriminating prices on this basis;
- the act of purchasing in the home market is usually undertaken by a separate consumer group, which, in most cases, consists of parents. In the case of schools it will usually be an ICT management team or a LEA making the decision. Therefore if the price of, say, educational online resources to schools increased, it is highly unlikely that schools could instruct parents to pay for these services for home use;
- in general, school budgets cannot be used to buy products solely for home (educational) use. Likewise, even though parents may pay directly for some of the educational resources used in school, it is usually the school that dictates what resources should be purchased;
- the distribution channels for delivering educational resources to schools and to informal learning environments differ. The former is typically supplied by specialist distributors whereas the latter is mostly supplied by retail outlets (e.g. WH Smiths, Dixons);
- there are benefits from learning in the home environment which are not always apparent at schools such as a more comfortable (and quieter) environment, more time at the PC and better control over access, and often superior hardware and internet connection speeds; and
- the links between in-school and out-of-school learning are becoming much stronger⁸⁰ However to date, the degree of connectivity in a practical and technical sense is quite limited.

Product market

Demand side substitution

6.48 To assess demand-side substitution in informal learning environments we focus on the degree of substitutability within, and between, online courses, as well as between the different forms of educational resource.

Substitutability within an online course and between online courses

6.49 To a certain extent, teachers dictate what pupils should learn at home. This restricts the choice that pupils can exert with regard to their learning of different parts of a course (or different courses) at home. Pupils, in theory, must do whatever homework they are told. Hence most of the arguments put forward with regard to demand-side substitutability, within, and between, online courses for the formal learning environment, are also applicable to the home market. It must also be recognised that there is a relatively small, but growing market for home study by independent learners (e.g. adults). This is particularly true for the latter Key Stages covered by the proposed Digital Curriculum service (e.g. GCSE subjects). For this group, there is more control, a priori, over what course to study and to a lesser degree, what parts of a given course to study.

Substitutability and complementarity between different educational resources

6.50 As with the schools market, the various forms of educational resource have different characteristics and educational benefits. Hence much of the preceding analysis is directly applicable. It is noteworthy that home learners have more autonomy over how they learn outside of school and where they source their information. This increasingly involves the use of a computer and the internet. Initial findings from ImpaCT2⁸¹ suggest that primary (secondary) pupils spend three (four) times longer on PC's at home than at school. The MORI report found that three-quarters of households with access to the internet,

⁷⁹ For example, educational printed resources that are intended solely for the home market typically take the form of revision aids or study guides whereas for schools they mostly take the form of curriculum-based textbooks.

⁸⁰ Indeed the BBC would like to increase the accessibility of curriculum content in the home by providing pathways from other educational and entertainment content (including television programming such as CBBC).

⁸¹ ImpaCT2 is part of the overall evaluation of the NGfL programme. It is a study for the period 1999-2002, covering 60 schools and over 2000 pupils in England.

used it for a child's homework.

Demand side substitution: Summary

6.51 Given the different usage characteristics noted above and the conclusions outlined in the preceding analysis of product demand-side substitutability within the schools market, there is evidence to suggest that the relevant market for the informal learning environment should also be defined as being at least as wide as educational software resources.

Supply side substitution

6.52 We do not believe that there are any substantial differences between the assessment of supply side substitution for the informal and formal learning environments. We therefore reiterate our conclusion noted above that the relevant market is probably at least as wide as the provision of educational software resources to informal learning environments. However, we also note that there is an increasing body of evidence to support a more definitive, wider market definition to include other educational resources and, indeed, the entire formal learning environment.

Geographic market

6.53 From a demand and supply side perspective we do not believe that there are any substantial differences between the assessment of the relevant geographic market for the informal and formal learning environments to merit further analysis. The relevant market is at least as wide as the UK.

Production of educational software content (and related services) in the UK

6.54 The BBC is committed to ensuring that 50% of the funds for the proposed Digital Curriculum service (i.e. £40-45 million over five years) would be spent on materials commissioned from a range of external suppliers. Details on the form that the commissioning could take were noted in Section V. Given that the production of educational software content is not the primary relevant market affected by the BBC's proposed Digital Curriculum service, the following assessment is not as extensive as the preceding analyses.

Product market

Demand side substitution

6.55 The demand for content and materials comes from the suppliers of educational software resources (e.g. Pearson, Granada Learning, the BBC). The majority of educational software resource suppliers produce most of their content in-house. The scope for pure play 'content producers' is usually limited to the provision of specialist functions such as flash animations.

6.56 The demand from the BBC for third party content production will range from large-scale commissions and co-productions to small elements of course materials. The BBC will decide its optimal mix of third party content commissioning and must maximise the value for money for its licence fee payers. As such we would expect to it to have considerable price sensitivity with regard to the range of products on offer. This is also true for commercial organisations looking to maximise the value for money for their shareholders.

6.57 The content that is required by educational resource suppliers for CD-ROMs, online sites and other forms of educational software is similar albeit with differing levels of interactivity and functionality. From a demand-side perspective, this market appears to be at least as wide as the production of educational software content and related services.

Supply side substitution

6.58 We understand that producers of educational content can switch relatively easily between the versioning of content from an online format to the format required by other forms of software delivery e.g. CD-ROMs. However, the skill set for producing content for textbooks is quite different from the skill set for the production of content for most software resources.

6.59 As noted above, most of the firms that provide educational software resources produce the majority of their content 'in-house'. Hence the prices charged by third party producers are constrained by the

ability of the consumer (i.e. the educational resource suppliers) to produce their own content.

6.60 For the purpose of this analysis, we therefore conclude that the relevant market is probably as wide as the production of educational software content and related services. However we recognise that given the differing nature of the various types of content production services that the BBC would like to use, there is scope for defining a whole series of different upstream markets.

Geographic market

6.61 Geographical boundaries rarely place a limitation on where educational resource suppliers obtain their content production services or from where content production companies wish to supply. There is a widespread use of ICT amongst the firms operating in these markets. It therefore seems reasonable to conclude that this relevant market is at least as wide as the UK.

Conclusions

6.62 We conclude that the potential relevant markets for the BBC's proposed Digital Curriculum service can be grouped at least as wide as the:

- Provision of educational software resources to formal learning environments (e.g. schools) in the UK.
- Provision of educational software resources to informal learning environments (e.g. homes, libraries) in the UK.
- Production of educational software content (and related services) in the UK.

6.63 We recognise that there is evidence to support the widening of the first two groups of relevant markets to include educational printed resources. We do not rule out that in the future, online provision may develop in form, acceptability and accessibility to become a stronger substitute for educational printed resources. Given the current evidence, however, we cannot support such a