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ICT, amenability and the BBC digital curriculum service in England:

Becta's report to the DCMS

Report on the subjects and key stages to be
covered by the BBC in its Year 1 commissioning
plans for England

Foreword

I am pleased to present Becta's report to the Secretary of State for Culture, Media and Sport on ICT, amenability¹ and the BBC digital curriculum service in relation to England and with reference to the National Curriculum for England. This report sits alongside equivalent reports for Northern Ireland, Scotland and Wales, with reference to their own curricula and circumstances.

The report is the outcome of work carried out by Becta as part of the approval conditions for the BBC digital curriculum service presented in the Schedule to the Secretary of State's decision letter of 8 January 2003, in particular condition 7. The report sets out in detail the principles and criteria Becta has used to develop a practical process for determining which learning outcomes are amenable to being taught by ICT in the context of the digital curriculum service, and the activities Becta has undertaken in reaching its conclusions.

The report should be seen in the broader context of the totality of the approval conditions. Becta has acted in the knowledge and spirit of the approval conditions, recognising that permission to develop such a service has been given in expectation that it can serve learners and teachers through distinctive and innovative approaches and the exploitation of the BBC's rich media archive.

Becta has worked in close collaboration with its stakeholders in order to develop a process for determining amenability that is appropriate to the needs of learners and teachers. I would like to record our thanks to all those who have contributed to this work, particularly the companies that took part in Becta's consultation with the commercial sector, and QCA for its support and detailed advice in relation to the National Curriculum.

The annex to the report contains Becta's verdicts on the amenability of learning outcomes to being taught by ICT in the subjects to be resourced by the digital curriculum service in its first year. It is Becta's intention to supplement this report periodically as we consider the remaining subjects to be resourced through to 2008. The supplements will provide an opportunity to review amenability as necessary, given the likelihood that it will change as technology and practice develop.

Becta has very much welcomed the opportunity to undertake this work and we view it as a key element in a coherent overarching strategy to improve the availability and use of high-quality digital content. We look forward to continuing to work effectively with our stakeholders on this important issue.

Owen Lynch
Chief Executive Becta

¹ For the purposes of this exercise and in this context, 'amenable' and 'amenability' means the extent to which something may be learned or taught through or with the use of ICT.

1. Introduction

The BBC first put forward the concept of a 'digital curriculum service' in 2000. A period of discussion and debate with interested parties followed. The BBC sought approval for its final version from the Department of Culture, Media and Sport (DCMS) on 3 May 2002. The proposals were given detailed consideration, which included assessment of the potential market impact and also took into account various market features, such as the ongoing provision of electronic learning credits (eLCs) to schools in England via Curriculum Online. Following public consultation, the Rt Hon Tessa Jowell MP, Secretary of State for Culture, Media and Sport, gave consent to the BBC digital curriculum service, subject to limits and constraints, on 9 January 2003. The European Commission gave clearance in September 2003.

The BBC digital curriculum service will provide a multimedia online resource, consisting of content and a limited learning platform. It will be based on current UK curricula and intended for use by learners at home and school. It will be formally launched in January 2006.

In general, the Secretary of State has required the BBC digital curriculum service to:

- stimulate, support and reflect the diversity of the UK
- innovate continually and promote technological and pedagogical experimentation
- be distinctive from, and complementary to, services provided by the commercial sector.

Among other things, the BBC is required to:

- cover up to a maximum of 50% of learning outcomes in each subject amenable to being taught by ICT (the remit for deciding which outcomes are amenable in this context has been placed with Becta)
- spend a maximum of 22% on core subjects and a maximum of 30% on non-core subjects in each year
- spend a minimum of 26% on resources for the nations and Welsh translations and a minimum of 22% on minority subjects overall
- spend an average of 50% of its content budget over five years on commissioning work from external suppliers
- publish commissioning plans according to the DCMS schedule
- make 'clear and prominent reference' to other sources of supply when promoting the BBC digital curriculum service.

The Secretary of State will review the service within two years of its launch. This review will include an independent assessment of the BBC digital curriculum service's impact on the market, and a public consultation.

Further information about the digital curriculum service can be obtained from the Department of Culture, Media and Sport and the BBC websites:

- details of the BBC's application and the associated consultation process
[http://www.culture.gov.uk/CREATIVE/digital_curriculum.html]
- the latest information from the BBC and the activities within the digital curriculum service
[http://www.bbc.co.uk/info/policies/digital_curriculum.shtml]
- the letter from the Secretary of State to the BBC approving the proposal
[http://www.culture.gov.uk/global/press_notices/archive_2003/dcms04_2003.html]
– the schedule attached to the letter sets out the constraints and limits on the BBC and includes Becta's remit for determining amenability (condition 7).

2. Becta's remit

The DCMS asked Becta to take on responsibilities in relation to the BBC's proposed digital curriculum service. In particular Becta is tasked with adjudicating in the question of amenability as set out in condition 7 of the DCMS conditions for the approval of the digital curriculum service:

The BBC must not produce resources covering more than 50% of those learning outcomes amenable to being taught by ICT. Since the proportion of learning outcomes amenable to being taught by ICT will vary from subject to subject and over time, the BBC must consult Becta as to which learning outcomes are so amenable in each subject. In the event of a dispute as to whether or not a particular learning outcome is amenable to being taught by ICT, Becta will have the final judgement. In reaching such a judgement, Becta will be looking to maximise the use of ICT in delivering the curriculum.

The judgements reached by Becta about which aspects of the national curricula are and which are not amenable to ICT have potential relevance beyond the immediate exercise. The requirement that the BBC must not cover more than 50% of the amenable outcomes in any subject will limit the extent of BBC coverage of the national curricula for each subject and at each key stage (or equivalent age range in the UK countries). The findings on amenability and the issues relating to the 50% limit could also potentially influence how we view pedagogic practice with ICT as well as having an impact on the education suppliers' market. Becta does not underestimate the relevance of the judgements to the commercial sector and the potential commercial impact. The decision to allow the BBC to make available a large number of potentially high-quality, free resources in a commercial market is significant.

While this report focuses on condition 7 of the DCMS conditions for the approval of the digital curriculum service, it should be noted that there are other interrelated conditions which will place additional constraints on the BBC. For example, condition 4 states the following:

The service must innovate continually, and exploit the extensive archives of the BBC and its media-rich resources, and promote technological and pedagogical experimentation. The service, taken as a whole, should be distinctive from and complementary to services provided by the commercial sector.

This condition, along with others, illustrates that ICT amenability is one aspect of a multi-faceted approval framework to which the BBC is bound by the DCMS conditions.

3. Becta's response to the remit

In carrying out its DCMS remit, Becta has sought at all times to act in accordance with the spirit of the Secretary of State's intentions as set out in the letter of approval of 9 January 2003, and in a fair and transparent way. Becta has acted without prejudice or bias both in reaching judgements about ICT amenability and when dealing with stakeholders, while seeking to promote the effective use of ICT and e-learning in education.

Becta has a key role in the strategic development of ICT in learning and teaching. As such, the research, information and advice it disseminates form part of a coherent vision for the development of ICT. This vision is based on key underpinning beliefs, derived from the available evidence, about the nature of learning and teaching with ICT. From these, Becta has developed principles specific to the work it has taken on in relation to amenability:

- that ICT can, used effectively, support the learner in achieving learning outcomes
- that ICT is, in the main, best applied to give concrete representation to abstract ideas, rather than as an abstract alternative to tangible, real-life experience where this is appropriate and readily available
- that ICT alone does not provide the range of learning experiences that amounts to a broad and balanced curriculum, and that a variety of ICT-based and non-ICT-based resources should be employed in the effective delivery of a curriculum
- that, even though an amenable learning outcome can be learnt or taught via ICT, this does not imply that it should be taught by ICT
- that 'breadth of study' requirements should be taken fully into account when planning digital curriculum service resources (in terms of recognising the scope of ICT in the curriculum in England)
- that, wherever possible, curriculum resources should provide opportunities for learners to develop and apply their ICT capability
- that the role of ICT in learning and teaching should be sustainable for learners and teachers
- that materials developed using public money should take the interests of the individual UK nations fully into account, while at the same time being shared where possible in order to make the best use of the investment
- that the adoption of international standards and specifications is vital to the development of a sound market for e-learning content and resources. (This ensures that resources and content can be shared and moved between systems, and in the case of the BBC digital curriculum service will maximise the value of this public investment in e-learning.)
- that materials developed with public money should be structured to allow inexpensive ongoing translation into the various languages of the UK, even after the originator's own work on them has ceased
- that digital learning resources should be created and designed to be accessible, usable (and re-usable) and inclusive to meet the needs of end-users
- that amenability will change over time as technologies and practices evolve.

Becta's overriding principle is to best reflect the needs of UK learners. This implies, on the one hand, maximising the appropriate use of ICT and, on the other, not encouraging the use of ICT for its own sake or as the only means of teaching or learning. The BBC is encouraged to make use of the guidelines and information available at Becta's ICT Advice site [<http://www.ictadvice.org.uk>].

4. Becta's approach to the task

Becta has developed its approach to the task through thorough consideration of the four UK national curricula and consultation with a wide variety of stakeholders. These include the curriculum authorities for the nations, teachers and others experienced in the use of ICT for teaching and learning, and the commercial sector. This report is one of four, which between them show the principles Becta has developed as they apply to all four UK curricula. As the BBC continues the roll out of its digital curriculum service, Becta's dialogue with the appropriate curriculum bodies will continue.

For each nation, much of the information required to establish amenability and develop measures of '50%' is contained in custom and practice and national expectations. This is particularly true of the 50% measures. This work inevitably involves matters of professional judgement, and Becta will look to QCA for detailed advice when reviewing the BBC's commissioning plans for resources for England.

4.1 Defining 'learning outcomes'

Becta needed to determine what is, for the purposes of this exercise, a 'learning outcome'. In particular, Becta wished to develop an approach that would be coherent across the four nations. In the case of the curriculum in England, Becta considered three possibilities:

- using statements (or requirements) from the statutory programme of study for each subject
- using level descriptions from the statutory order for each subject
- using other non-statutory national guidelines such as (in England) the national frameworks and the QCA schemes of work.

After due consideration, Becta opted to use the learning statements (or requirements) for each subject as listed in the Revised National Curriculum for England (QCA, 2000). In England the programmes of study were chosen over the level descriptions because they set out learning intentions in the most specific way.

However, Becta also recognises the force of a comment made in the commercial-sector consultation:

Learning outcomes, couched as they are in simple language, belie the complex nature of their origins and the challenges of their reconstruction into a coherent personalised programme of study.

4.2 Defining 'ICT amenability'

'ICT amenability' is not a term that has a standard definition in education and so it has been necessary to develop a consensual understanding of the term. For this reason, in developing its approach Becta has consulted with:

- expert practitioners
- the statutory curriculum bodies in each country (ACCAC in Wales, CCEA in Northern Ireland, Learning and Teaching Scotland in Scotland, QCA in England)
- the commercial sector (as defined by the list of Curriculum Online producers and suppliers held on Becta's database).

Those consulted recognised that:

... establishing whether a learning outcome is, or is not, unambiguously ICT amenable is clearly problematic. Determining ICT amenability will depend on a number of factors, some of which are subjective in nature.

(Response from a major private-sector company to Becta's consultation)

4.3 Developing criteria for making judgements

As a first step, Becta consulted subject experts and asked them to consider the concept of ICT amenability 'in principle' – that is to say without taking into account any practical elements such as suitability, available technology, or appropriateness. Becta then considered criteria that could be used to determine which of the learning outcomes deemed amenable in principle were also amenable in practice, within the context of the proposed BBC digital curriculum service. These criteria were the subject of the consultation and were posted on the Becta website on 6 July, 2004.

In general, those consulted welcomed 'the systematic approach that Becta is seeking to apply to the concept of amenability'. (Response from private-sector company)

It was also commented that 'the criteria to be used must be as objective as possible, to the extent that one would expect different panels applying the criteria to a particular outcome to produce the same yes/no answer'. (Response from private-sector company)

As a result of the consultation, Becta developed the following criteria for judging ICT amenability within the context of this exercise.

4.3.1 Amenable learning outcomes should be generally suitable for the online medium of the proposed BBC digital curriculum service.

For the purposes of this exercise, the term 'ICT amenable' is used to refer to digital assets, applications and tools that:

- can be accessed online (in real time) or in cached format from a local server (for example in a school network)
- can be used by a teacher or learner with a reasonable level of ICT capability, based on the expected outcomes for the New Opportunities Fund training for teachers² and the appropriate expectations within the relevant ICT curriculum for learners.

4.3.2 The technologies required to exploit the resources available in the proposed BBC digital curriculum service should be generally accessible and affordable.

For the purposes of this exercise, the term 'accessible and affordable technologies' is used to mean technologies (commercially or freely available) that have potential for general adoption in the school and home environment within the time frame of the proposed development.

For example, it would be possible to produce a downloadable software voice recorder music tool which could be made generally available. This would require the use of a microphone. Such technology is both accessible and affordable.

However, it is also possible to produce downloadable assets and applications that require the use of sophisticated equipment such as high-end heart-monitoring equipment or sophisticated industry-standard software such as that used to produce realistic three-dimensional animations. These types of technologies are not generally accessible and affordable for schools and homes.

Becta considered taking a more restrictive view, limiting the BBC's proposed development to those technologies that are currently available in the majority of schools and homes. After due consideration, it was decided that this restriction could unduly hinder the BBC's ability to innovate. Becta believes that a key aspect of the 'distinctiveness' of the BBC's offering could include support for, and promotion of, emerging technologies and practices.

² Becta believes that the existing expected outcomes provide a reasonable basis for making decisions on what might be expected of teachers' ICT capability and that anything less demanding would unduly restrict the BBC's ability to innovate.

4.3.3 The use of ICT should be fit for purpose and appropriate in terms of pupil age and need, the use of time, and effectiveness.

For the purposes of this exercise, the terms 'fit for purpose' and 'appropriate' are used to mean ICT-based activities that offer an authentic, meaningful way of developing children's knowledge, skills and understanding of the subject matter.

Certain aspects of children's learning depend largely on their physical experience of 'real world' phenomena. For example, an understanding of the concept of temperature is built on practical experiences of, for instance, touching cold, tepid and warm water and experiencing subsequent physical reactions. It is not possible to develop a full, meaningful understanding and experience of the concept of temperature through a purely ICT-based activity. This contrasts with the use of ICT, for example, to make patterns visible within abstract data, which is fit for purpose and appropriate. In essence, Becta believes that ICT is generally best applied to make concrete representations of abstract ideas, rather than as an abstract alternative to concrete, real-life experience, where this is appropriate and available.

For the purpose of this exercise, activities not considered fit for purpose include:

- activities on screen whose principal aim is to substitute for activity that could better be addressed through physical, concrete experience and where that physical, concrete experience reflects sounder pedagogy
- activities which introduce an unrealistic, additional burden on learners or teachers in terms of the ICT skills needed or the time taken.

In relation to any resources for pupils with special educational needs (SEN) planned by the BBC, Becta recognises that consideration should be given to amenability in terms of the specific needs and requirements of these pupils. Given that SEN covers a spectrum of need, it is difficult to make specific judgements in advance of learning more from the BBC about the approach it will take in any particular case. In these cases Becta will engage in dialogue with the BBC, take further advice as required, and make any appropriate refinements to its view on amenability in a particular subject.

4.3.4 The ICT-amenable learning outcomes, taken together, should provide the basis of a coherent offering for a particular subject and key stage.

Some learning outcomes taken in isolation and considered out of context would appear not to be amenable to ICT. Examples from the National Curriculum programmes of study include:

Pupils should be taught to ask and answer questions about the starting points for their work, and develop their ideas.

Art and design, Key Stage 1, 1b

Pupils should be taught to ask and answer questions about the past.

History, Key Stage 1, 4b

However, such learning outcomes address key aspects of the subject and describe 'holistic' or 'integrated' skills that are part of effective learning in that subject. Other examples include the skills of enquiry and investigation in science, and of listening, performing and composing in music. These holistic or integrated skills are part and parcel of a meaningful learning experience and, when combined with the other learning outcomes, constitute a coherent offering.

For the purposes of this exercise, therefore, it is appropriate to judge learning outcomes which address holistic or integrated skills as amenable to ICT. This allows the BBC to address the outcomes that represent the holistic skills of the subject, ensuring that the proposed BBC materials are coherent and pedagogically sound. Becta considers it inappropriate to rule these out, as doing so would require the BBC to produce unsound materials. These holistic skills are also the most likely to be required by the curricula of all four nations, and, where it does not interfere with the development of materials that address the distinctive needs of the individual UK nations, Becta would wish to encourage the development of materials that can be shared by all.

The 'breadth of study' requirements in the National Curriculum for England cannot, in Becta's view, be assessed for amenability. These requirements refer to the overall range of experiences that learners should encounter during a key stage. However, the BBC must take these requirements into account in their planning. The breadth of study requirements help to clarify the correct balance of learning experiences in the curriculum, and so can help to provide a clearer view of the appropriate scope of ICT in the subject and key stage concerned. The resources developed by the BBC should be in line with the breadth of study requirements for each subject and key stage.

4.4 Other aspects of amenability

For the purpose of fulfilling the DCMS remit, Becta has considered the question of ICT amenability of learning outcomes on a case-by-case basis, in order to judge which learning outcomes are and which are not amenable in this context. Those judged to be not amenable lie outside the scope of the proposed BBC digital curriculum service.

Becta maintains that any judgements reached on the ICT amenability of learning outcomes are made for the purposes of this exercise only and are restricted to use in this context. Any judgements made by Becta do not imply that 'amenable' learning outcomes should be taught by ICT, nor do they imply any view on how much ICT is appropriate for any key stage in any subject.

Indeed, Becta recognises that a curriculum should not be learned or taught solely via ICT, as ICT resources alone do not provide the range of learning experiences that amount to a broad and balanced curriculum. Even where it may find a subject to be wholly amenable in relation to the learning outcomes considered, Becta does not wish to suggest or imply in any way that a subject could or should be resourced entirely by ICT. For all subjects, an appropriate balance should be struck between the time pupils spend at the screen and the time spent elsewhere.

In addition, while a learning outcome may be judged amenable, it is still the case that any particular learning or teaching resource developed may or may not be effective and appropriate. Becta strongly recommends that, as it goes forward with its planning, the BBC takes account of the advice provided on the National Curriculum in Action website [<http://www.ncaction.org.uk/>].

4.5 Determining the BBC's coverage of a maximum 50%

In general, the programmes of study for England list holistic or integrated skills³ of a subject separately from the statements that relate to relevant knowledge and understanding. Although this separation can be helpful for the purposes of planning and assessment, the two types of requirement are wholly integrated in terms of any teaching and learning activity. For this reason, to treat both types of requirement as countable towards the maximum 50% ruling would constitute 'double counting' of the underlying requirements in subjects such as science and mathematics. Therefore, the learning outcomes drawn from the curricula do not include these holistic or integrated skills for the purposes of determining the extent of BBC's 50% coverage and the BBC is free to treat these skills in their resources.

The requirements for some subjects – for example, art and design – consist almost entirely of holistic skills. In these subjects the learning outcomes are not individually specified like the countable outcomes of science and mathematics; they are spread across the learning activities carried out by the pupils throughout the key stage. For these subjects, Becta will use appropriate baseline measures such as the number of units of work or topics (for instance, in the QCA non-statutory schemes of work) that a learner in school might reasonably cover in order to achieve the learning outcomes. Based on this, the BBC would be able to develop resources for the equivalent of up to half of the units in a key stage. It should be noted that this measure refers to the 'size' and scope of units, and not to their content.

4.6 The primary intentions of BBC digital curriculum service resources

Becta recognises that it is both impossible and undesirable to prevent creative teachers from utilising a resource aimed at one learning outcome to support another. For example, a creative teacher may choose to use a music resource to help teach sound within the science curriculum or a resource targeted at one key stage could be used to support learners with specific needs at a different key stage.

For this reason Becta proposes that the BBC's primary intended purposes for any resource form the basis of calculating 50% of the learning outcomes for any subject at any key stage.

4.7 The BBC's right to appeal

The learning outcomes for each subject at each key stage that meet Becta's amenability criteria (see **4.3.1** to **4.3.4**) will make up the amenable outcomes from which the BBC may select to produce resources that cover up to 50%. We note, however, that the DCMS remit allows the BBC to challenge Becta's decision where it feels it has evidence to show that a learning outcome is already – or might be made – amenable. Becta will deal swiftly with any individual appeal and, in reaching judgement, will look to maximise the use of ICT in learning and teaching.

³ Becta's judgement on how these types of outcome should be treated for the purpose of defining ICT amenability is dealt with in 4.3.4.

5. Distinctiveness, complementarity and the choices before the BBC

In indicating how 50% of amenable learning outcomes is to be measured in each subject, no comment is implied as to which outcomes the BBC should cover. However, Becta would wish to draw the BBC's attention to particular features of the current digital content market and sources of information.

For much of the curriculum the commercial sector has already produced well-received material, which the BBC is no doubt considering very carefully. Becta would wish to endorse a key message of its recent consultation with the commercial sector that this investment of public money is best placed in breaking new ground and extending the use of ICT – that is, in creating resources for currently under-resourced areas of the curriculum, and for developing innovative and experimental approaches to extending and deepening learning through ICT.

The BBC will also want to consider the current use of ICT in schools and homes and how this can be developed and extended. For schools, information from Ofsted's reports on ICT use in England and other sources such as Becta itself will be of great value, and Becta would wish to encourage the BBC to seek out and use such sources. Further, as discussed in the remit from the DCMS, the BBC will wish to give close attention to the recommendations of the Curriculum Online Content Advisory Board as these are released.

National Curriculum for England: amenability findings for subjects and key stages in the BBC's Year 1 commissioning plans.

1a) English at Key Stage 1

The learning requirements for English at Key Stage 1 are organised into three broad themes: speaking and listening, reading, and writing. The requirements have been examined for amenability.

In En1 on speaking and listening, sections 1a–1f and 2a–2f might be considered non-amenable if taken in isolation and out of context. Sections 1 and 2 in En1 concern speaking and listening. While it would be difficult to argue that the requirements under these headings could be taught via ICT, it is clear that ICT might be used to support and extend the learning. Further, these requirements address key aspects of the subject, and describe 'holistic' or 'integrated' skills that are part of effective learning in the subject. Given these considerations, it is appropriate to judge these learning outcomes as amenable to ICT.

It should be noted that it is vital that all pupils experience English as a 'live' interactive language used by many different individuals and groups in real time and in real contexts. Pupils also need to have real experience of handling printed texts of all kinds as well as to read them on screen, and must be able to write on paper as well as on computer. The tangible and interactive aspects of working in English are particularly pertinent to the teaching and learning in Key Stage 1, although by no means exclusively so. However, there are many contexts in which the programmes of study at all key stages are amenable to ICT, and might be enhanced through the use of ICT.

Measuring 50%

The programme of study at KS1 contains a large number of outcomes, and as such provides a reasonable basis for measuring the 50% in terms of amenable learning outcomes.

In this case, as elsewhere, Becta's judgement on the amenability of learning outcomes should not be interpreted as a requirement or recommendation that they be taught or supported by ICT-based resources.

Amenability statement

English Key Stage 1

The following outcomes are judged to be **not** amenable:

En1: 3a, 3b, 3c, 3d, 3e, 4a, 4b, 4c

En3: 4a, 4d, 5a, 5b, 5c, 5d, 5e

Context

For the purpose of fulfilling the DCMS remit, Becta has considered the question of ICT amenability of learning outcomes on a case-by-case basis, in order to judge which learning outcomes are and which are not amenable in this context. Those judged to be not amenable lie outside the scope of the proposed BBC digital curriculum service.

Becta maintains that any judgements reached on the ICT amenability of learning outcomes are made for the purposes of this exercise only and are restricted to use in this context. Any judgements made by Becta do not imply that 'amenable' learning outcomes should be taught by ICT, nor do they imply any view on *how much* ICT is appropriate for any key stage in any subject.

Indeed, Becta recognises that a curriculum should not be learned or taught solely via ICT, as ICT resources alone do not provide the range of learning experiences that amount to a broad and balanced curriculum. Even where it may find a subject to be wholly amenable in relation to the learning outcomes considered, Becta does not wish to suggest or imply in any way that a subject could or should be resourced entirely by ICT. For all subjects, an appropriate balance should be struck between the time pupils spend at the screen and the time spent elsewhere.

In addition, while a learning outcome may be judged amenable, it is still the case that any particular learning or teaching resource developed may or may not be effective and appropriate. Becta strongly recommends that, as it goes forward with its planning, the BBC take account of the advice provided on the National Curriculum in Action website [<http://www.ncaction.org.uk/>].

1b) Geography at Key Stage 2

Geography at Key Stage 2 is organised into four themes:

- geographical enquiry and skills
- knowledge and understanding of places
- knowledge and understanding of patterns and processes
- knowledge and understanding of environmental change and sustainable development.

The first of these describes a holistic, or integrated, group of skills. Good pedagogy demands that they should be taught and learned in an integrated fashion and, for the reasons already given (see **4.3.4**), these skills are not included in the list of learning outcomes against which the 50% would be measured.

The statements have been examined for amenability. We note that while requirement 2b, '**to use appropriate fieldwork techniques and instruments**', might be considered non-amenable at first sight, ICT-mediated resources might reasonably be developed to support, consolidate and extend this learning.

Measuring 50%

The BBC may select up to 50% of those outcomes deemed amenable by Becta. These 'countable' learning outcomes do not include the section on geographical enquiry and skills, as mentioned above.

Amenability statement

There are no outcomes judged to be **not** amenable in the programme of study for England in geography at Key Stage 2.

In this case, as elsewhere, Becta's judgement on the amenability of learning outcomes should not be interpreted as a requirement or recommendation that they should be taught or supported by ICT-based resources.

Context

For the purpose of fulfilling the DCMS remit, Becta has considered the question of ICT amenability of learning outcomes on a case-by-case basis, in order to judge which learning outcomes are and which are not amenable in this context. Those judged to be not amenable lie outside the scope of the proposed BBC digital curriculum service.

Becta maintains that any judgements reached on the ICT amenability of learning outcomes are made for the purposes of this exercise only and are restricted to use in this context. Any judgements made by Becta do not imply that 'amenable' learning outcomes should be taught by ICT, nor do they imply any view on *how much* ICT is appropriate for any key stage in any subject.

Indeed, Becta recognises that a curriculum should not be learned or taught solely via ICT, as ICT resources alone do not provide the range of learning experiences that amount to a broad and balanced curriculum. Even where it may find a subject to be wholly amenable in relation to the learning outcomes considered, Becta does not wish to suggest or imply in any way that a subject could or should be resourced entirely by ICT. For all subjects, an appropriate balance should be struck between the time pupils spend at the screen and the time spent elsewhere.

In addition, while a learning outcome may be judged amenable, it is still the case that any particular learning or teaching resource developed may or may not be effective and appropriate. Becta strongly recommends that, as it goes forward with its planning, the BBC take account of the advice provided on the National Curriculum in Action website [<http://www.ncaction.org.uk/>].

1c) **History at Key Stage 2**

The learning requirements for history at Key Stage 2 are organised into five broad themes:

- chronological understanding
- knowledge and understanding of events, people and changes in the past
- historical interpretation
- historical enquiry
- organisation and communication.

Together, the requirements under these headings describe a set of inter-related holistic knowledge and skills of the type described in section 4.3.4 above. Since pupils develop these in the context of each other, for example, chronological understanding in the context of historical enquiry, to require the BBC digital curriculum service to deal with some of them but not others would be to require it to produce pedagogically unsound resources.

Measuring 50%

Since the requirements of the programme of study for history at Key Stage 2 form a holistic knowledge/skill set, the BBC may develop resources for the equivalent of up to half the QCA scheme of work units in the key stage. It should be noted that this measure refers to the 'size' and scope of units, and not to their content.

Amenability statement

Based on both the inspection of individual outcomes and an assessment of the role of ICT in the holistic development of skills in Key Stage 2 history, Becta finds that there are no outcomes judged to be not amenable in the programme of study for England in history at Key Stage 2.

In this case, as elsewhere, Becta's judgement on the amenability of learning outcomes is restricted to the purposes of this exercise and should not be interpreted as a requirement or recommendation that they should be taught or supported by ICT-based resources.

Context

For the purpose of fulfilling the DCMS remit, Becta has considered the question of ICT amenability of learning outcomes on a case-by-case basis, in order to judge which learning outcomes are and which are not amenable in this context. Those judged to be not amenable lie outside the scope of the proposed BBC digital curriculum service.

Becta maintains that any judgements reached on the ICT amenability of learning outcomes are made for the purposes of this exercise only and are restricted to use in this context. Any judgements made by Becta do not imply that 'amenable' learning outcomes should be taught by ICT, nor do they imply any view on *how much* ICT is appropriate for any key stage in any subject.

Indeed, Becta recognises that a curriculum should not be learned or taught solely via ICT, as ICT resources alone do not provide the range of learning experiences that amount to a broad and balanced curriculum. Even where it may find a subject to be wholly amenable in relation to the learning outcomes considered, Becta does not wish to suggest or imply in any way that a subject could or should be resourced entirely by ICT. For all subjects, an appropriate balance should be struck between the time pupils spend at the screen and the time spent elsewhere.

In addition, while a learning outcome may be judged amenable, it is still the case that any particular learning or teaching resource developed may or may not be effective and appropriate. Becta strongly recommends that, as it goes forward with its planning, the BBC take account of the advice provided on the National Curriculum in Action website [<http://www.ncaction.org.uk/>].

1d) Mathematics at Key Stage 1

Ma2 1 and Ma3 1 on 'using and applying' in mathematics key stage 1 list sets of holistic or integrated skills. These lists, which describe mathematical problem-solving and process skills, are judged to be of the type described in section 4.3.4 above, for which good pedagogy requires that they should be taught and learnt in an integrated way. These then are considered to be amenable for the purposes of this exercise but, as detailed in section 4.5, will not be included when determining the question of 50% coverage.

The remaining requirements, which define the content of mathematics, have been examined for amenability. For many of these, appropriate learning and teaching requires first-hand physical exploration and experience of the real world as described in section 4.3.3. It is through practical experience with physical objects that children develop abstract ideas of number and shape, what it means to add or subtract, and where to direct their attention when particular features of a shape are being considered. An example of this is:

Pupils should be taught to count reliably up to 20 objects at first and recognise that if the objects are rearranged the number stays the same.

Mathematics Key Stage 1 Ma2 2a

To develop this understanding, children need practical activity, sorting real objects into sets, learning to say the number names in order, learning to say one number for each object and recognising that the last number they say in the count represents the cardinal value – the number in the set.

For these reasons, it would not be fitting or appropriate to introduce the teaching and learning of many mathematical concepts through an ICT medium. However, it is feasible that an ICT-based resource might be used to consolidate, refine and apply understanding of previously learnt concepts.

The BBC has made it clear to Becta that in developing resources for Key Stage 1 mathematics it intends to focus on developing skills of problem solving, and using and applying knowledge and understanding rather than the initial teaching of concepts. It is in this sense, then, that the amenability of the learning outcomes has been determined as shown below. There is little mathematics that is not amenable. However, the subject is not considered entirely amenable: there are some fundamental mathematical ideas and concepts that are most appropriately developed through a concrete, real-world experience.

Measuring 50%

The BBC may select up to 50% of those outcomes judged to be amenable by Becta. For the purposes of determining 50%, the 'using and applying' sections of Ma2 1 and Ma3 1 in mathematics are not included in the equation, as this would constitute double counting. Those judged to be not amenable are listed below.

In this case, as elsewhere, Becta's judgement on the amenability of learning outcomes should not be interpreted as a requirement or recommendation that they should be taught or supported by ICT-based resources.

Amenability statement

Mathematics at Key Stage 1

The following outcomes are judged to be **not** amenable:

Ma2: 5b

Ma3: 4a, 4c

Context

For the purpose of fulfilling the DCMS remit, Becta has considered the question of ICT amenability of learning outcomes on a case-by-case basis, in order to judge which learning outcomes are and which are not amenable in this context. Those judged to be not amenable lie outside the scope of the proposed BBC digital curriculum service.

Becta maintains that any judgements reached on the ICT amenability of learning outcomes are made for the purposes of this exercise only and are restricted to use in this context. Any judgements made by Becta do not imply that 'amenable' learning outcomes should be taught by ICT, nor do they imply any view on *how much* ICT is appropriate for any key stage in any subject.

Indeed, Becta recognises that a curriculum should not be learned or taught solely via ICT, as ICT resources alone do not provide the range of learning experiences that amount to a broad and balanced curriculum. Even where it may find a subject to be wholly amenable in relation to the learning outcomes considered, Becta does not wish to suggest or imply in any way that a subject could or should be resourced entirely by ICT. For all subjects, an appropriate balance should be struck between the time pupils spend at the screen and the time spent elsewhere.

In addition, while a learning outcome may be judged amenable, it is still the case that any particular learning or teaching resource developed may or may not be effective and appropriate. Becta strongly recommends that, as it goes forward with its planning, the BBC take account of the advice provided on the National Curriculum in Action website [<http://www.ncaction.org.uk/>].

1e) Modern foreign languages (MFL) at Key Stage 3

There are very few statements in the National Curriculum programme of study for MFL that can be separated out and covered discretely. The nature of language learning is such that there is constant interplay between different skills. While it is possible to focus on one aspect of language learning at a particular time, other skills inevitably come into play. Otherwise the language learning experience would be unnaturally distorted.

The learning requirements for modern foreign languages at Key Stage 3 are organised into four broad themes:

- acquiring knowledge and understanding of the target language
- developing language skills
- developing language-learning skills
- developing cultural awareness.

Together, the requirements under these headings describe a set of inter-related 'holistic' knowledge and skills of the type described in section 4.3.4 above. Since pupils develop these skills in the same contexts – for example, acquiring 'the grammar of the target language' (1b) in the context of 'working with authentic materials' (4a) – to require the BBC digital curriculum service to deal with up to 50% of these, but not to deal with the others, would be to require it to produce pedagogically unsound resources.

We note, however, that some requirements are not amenable. These are listed below. In particular, 4b, – which requires pupils to 'be taught about different countries and cultures by communicating with native speakers' – is considered non-amenable in the context of speaking and listening, though amenable in the context of reading and writing. It is possible that developments in technology will alter this position, and this outcome may be reviewed at some point in the future.

Measuring 50%

Since the requirements of the programme of study for MFL at Key Stage 3 form a set of holistic skills, the BBC may develop resources for the equivalent of up to half of the QCA scheme of work units in the key stage. It should be noted that this measure refers to the 'size' and scope of units, and not to their content. The omission of a small number of outcomes judged to be not amenable does not materially affect this assessment.

In this case, as elsewhere, Becta's judgement on the amenability of learning outcomes should not be interpreted as a requirement or recommendation that they should be taught or supported by ICT-based resources.

Amenability statement

MFL Key Stage 3

The following outcomes are judged to be **not** amenable:

2d, 4b (in terms of speaking and listening only), 5b

Context

For the purpose of fulfilling the DCMS remit, Becta has considered the question of ICT amenability of learning outcomes on a case-by-case basis, in order to judge which learning outcomes are and which are not amenable in this context. Those judged to be not amenable lie outside the scope of the proposed BBC digital curriculum service.

Becta maintains that any judgements reached on the ICT amenability of learning outcomes are made for the purposes of this exercise only and are restricted to use in this context. Any judgements made by Becta do not imply that 'amenable' learning outcomes should be taught by ICT, nor do they imply any view on *how much* ICT is appropriate for any key stage in any subject.

Indeed, Becta recognises that a curriculum should not be learned or taught solely via ICT, as ICT resources alone do not provide the range of learning experiences that amount to a broad and balanced curriculum. Even where it may find a subject to be wholly amenable in relation to the learning outcomes considered, Becta does not wish to suggest or imply in any way that a subject could or should be resourced entirely by ICT. For all subjects, an appropriate balance should be struck between the time pupils spend at the screen and the time spent elsewhere.

In addition, while a learning outcome may be judged amenable, it is still the case that any particular learning or teaching resource developed may or may not be effective and appropriate. Becta strongly recommends that, as it goes forward with its planning, the BBC take account of the advice provided on the National Curriculum in Action website [<http://www.ncaction.org.uk/>].

1f) **Music at Key Stage 2**

The learning requirements for music at Key Stage 2 are organised into four broad themes:

- controlling sounds through singing and playing
- creating and developing musical ideas
- responding and reviewing
- listening, and applying knowledge and understanding.

Together, the requirements under these headings describe a set of inter-related 'holistic' skills of the type described in section 4.3.4 above, though it should be noted that the requirement for listening and applying knowledge and understanding underpins all other requirements. Since pupils develop these skills in the context of each other – for example, listening skills in the context of composing and performing – to require the BBC digital curriculum service to deal with some of them but not others would be to require it to produce pedagogically unsound resources.

One requirement in particular, taken in isolation, would appear not to be amenable. This is requirement 1a, 'Pupils should be taught how to sing songs, in unison and two parts, with clear diction, control of pitch, a sense of phrase and musical expression'. However, ICT-based resources might reasonably be developed that will support the teaching and learning of singing, for example by stimulating interest, modelling possibilities and offering opportunities for reflection and analysis. We understand that the BBC is currently planning resources of this kind.

Measuring 50%

Since the requirements of the programme of study for music at Key Stage 2 form a set of holistic skills, the BBC may develop resources for the equivalent of up to half of the QCA scheme of work units in the key stage. It should be noted that this measure refers to the 'size' and scope of units, and not to their content. The intention of the scheme of work is that the units should be repeated, so the maximum 'size' should be broadly equivalent to seven units.

In this case, as elsewhere, Becta's judgement on the amenability of learning outcomes should not be interpreted as a requirement or recommendation that they should be taught or supported by ICT-based resources.

Amenability statement

Based on both the inspection of individual outcomes and an assessment of the role of ICT in the holistic development of skills in Key Stage 2 music, Becta judges that there are no outcomes that are not amenable to ICT in the programme of study for England in music at Key Stage 2.

In this case, as elsewhere, Becta's judgement on the amenability of learning outcomes is restricted to the purposes of this exercise and should not be interpreted as a requirement or recommendation that they should be taught or supported by ICT-based resources.

Context

For the purpose of fulfilling the DCMS remit, Becta has considered the question of ICT amenability of learning outcomes on a case-by-case basis, in order to judge which learning outcomes are and which are not amenable in this context. Those judged to be not amenable lie outside the scope of the proposed BBC digital curriculum service.

Becta maintains that any judgements reached on the ICT amenability of learning outcomes are made for the purposes of this exercise only and are restricted to use in this context. Any judgements made by Becta do not imply that 'amenable' learning outcomes should be taught by ICT, nor do they imply any view on *how much* ICT is appropriate for any key stage in any subject.

Indeed, Becta recognises that a curriculum should not be learned or taught solely via ICT, as ICT resources alone do not provide the range of learning experiences that amount to a broad and balanced curriculum. Even where it may find a subject to be wholly amenable in relation to the learning outcomes considered, Becta does not wish to suggest or imply in any way that a subject could or should be resourced entirely by ICT. For all subjects, an appropriate balance should be struck between the time pupils spend at the screen and the time spent elsewhere.

In addition, while a learning outcome may be judged amenable, it is still the case that any particular learning or teaching resource developed may or may not be effective and appropriate. Becta strongly recommends that, as it goes forward with its planning, the BBC take account of the advice provided on the National Curriculum in Action website [<http://www.ncaction.org.uk/>].

1g) Religious education (RE) at Key Stage 2

Becta refers throughout to the QCA proposed non-statutory framework for RE in England (July 2004). We note that this framework is under review and may change in due course. The following notes are therefore subject to revision.

As it currently stands, the proposed framework requires pupils to (among other things) investigate, analyse, interpret, explain and reflect on the forms and articles of religious belief and the impact of religions in personal life and the wider world. The learning outcomes are deeply interrelated. For example, '[investigating] and [explaining] why people belong to faith communities, and [explaining] the reasons for diversity in religion' (1c) is likely to involve '[evaluating] the challenges and tensions of belonging to a religion and the impact of religion in the contemporary world' (2b).

Together, the requirements of the framework describe a set of inter-related 'holistic' skills of the type described in section 4.3.4 above. Since pupils develop these skills in the context of each other, to require the BBC digital curriculum service to deal with some of them but not others would be to require it to produce pedagogically unsound resources.

Measuring 50%

Although the proposed non-statutory framework postdates the DfES/QCA scheme of work for RE, the scheme of work units provide a way of measuring, in terms of 'size' and scope rather than content. The BBC may develop resources for the equivalent of up to half of the QCA scheme of work units in the key stage.

Amenability statement

Based on both the inspection of individual outcomes and an assessment of the role of ICT in the holistic development of skills in Key Stage 2 religious education, Becta judges that there are no outcomes in the proposed non-statutory framework for RE (July 2004) for England at Key Stage 2 that are not amenable to ICT.

In this case, as elsewhere, Becta's judgement on the amenability of learning outcomes is restricted to the purposes of this exercise and should not be interpreted as a requirement or recommendation that they should be taught or supported by ICT-based resources.

Context

For the purpose of fulfilling the DCMS remit, Becta has considered the question of ICT amenability of learning outcomes on a case-by-case basis, in order to judge which learning outcomes are and which are not amenable in this context. Those judged to be not amenable lie outside the scope of the proposed BBC digital curriculum service.

Becta maintains that any judgements reached on the ICT amenability of learning outcomes are made for the purposes of this exercise only and are restricted to use in this context. Any judgements made by Becta do not imply that 'amenable' learning outcomes should be taught by ICT, nor do they imply any view on *how much* ICT is appropriate for any key stage in any subject.

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In addition, while a learning outcome may be judged amenable, it is still the case that any particular learning or teaching resource developed may or may not be effective and appropriate. Becta strongly recommends that, as it goes forward with its planning, the BBC take account of the advice provided on the National Curriculum in Action website [<http://www.ncaction.org.uk/>].

1h) Science at Key Stage 2

Sc1 in science lists a group of related holistic or integrated skills of scientific investigation. These lists are judged to be of the type described in section 4.3.4 above, for which good pedagogy requires that they should be taught and learnt in an integrated way. These then are considered to be amenable for the purposes of this exercise but, as detailed in section 4.5, will not be included when determining the question of 50% coverage.

The remaining requirements have been examined for amenability. For many of these, appropriate learning and teaching requires first-hand physical exploration and experience of the real world as described in section 4.3.3. An example of this is that 'pupils should be taught to compare everyday materials and objects on the basis of their material properties,

including hardness, strength, flexibility and magnetic behaviour, and to relate these properties to everyday uses of the materials' (Sc3 1a).

It would not be fitting or appropriate to introduce the teaching and learning of this type of aspect of science and mathematics through the medium of ICT, since pupils' understanding in the abstract of patterns of behaviour of natural phenomena is founded on their personal physical experience of the real world. However, it is also the case that ICT-based resources might be used to consolidate, extend and apply understanding of these previously encountered concepts.

The BBC has made it clear to Becta that in developing resources for Key Stage 2 science it intends to focus on developing skills of problem-solving, using and applying knowledge and understanding, and investigation rather than the teaching of concepts. It is in this sense, then, that the learning outcomes are considered amenable, and only to the extent that resources develop and apply experience that has come from the real world.

Measuring 50%

The BBC may select up to 50% of those outcomes judged to be amenable by Becta. For the purposes of determining 50%, Sc1 science is not included in the equation, as this would constitute double counting.

Amenability statement

Science at Key Stage 2

There are no outcomes judged to be not amenable.

In this case, as elsewhere, Becta's judgement on the amenability of learning outcomes is restricted to the purposes of this exercise and should not be interpreted as a requirement or recommendation that they should be taught or supported by ICT-based resources.

Context

For the purpose of fulfilling the DCMS remit, Becta has considered the question of ICT amenability of learning outcomes on a case-by-case basis, in order to judge which learning outcomes are and which are not amenable in this context. Those judged to be not amenable lie outside the scope of the proposed BBC digital curriculum service.

Becta maintains that any judgements reached on the ICT amenability of learning outcomes are made for the purposes of this exercise only and are restricted to use in this context. Any judgements made by Becta do not imply that 'amenable' learning outcomes should be taught by ICT, nor do they imply any view on *how much* ICT is appropriate for any key stage in any subject.

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In addition, while a learning outcome may be judged amenable, it is still the case that any particular learning or teaching resource developed may or may not be effective and appropriate. Becta strongly recommends that, as it goes forward with its planning, the BBC take account of the advice provided on the National Curriculum in Action website [<http://www.ncaction.org.uk/>].

2a) Business studies at GCSE

The learning requirements for business studies at GCSE are set out in the subject criteria developed by QCA and the specifications produced by the relevant awarding bodies in response to these criteria. The requirements have been examined for amenability.

Some of the requirements describe a 'holistic' or 'integrated' group of skills. Good pedagogy demands that these should be taught and learned in an integrated fashion and, for the reasons already given (see section 4.3.4), these skills are not included in the list of learning outcomes against which the 50% would be measured.

The remaining requirements could, in principle, be taught via ICT (though see section on context below).

Measuring 50%

In this subject, the GCSE specifications (syllabuses) produced by the awarding bodies must be used as the basis for the determination of 50%.

Amenability statement

Business studies at GCSE

Based on both the inspection of the learning requirements set out in the specifications and an assessment of the role of ICT in the holistic development of skills in GCSE business studies, Becta finds that there are no outcomes judged to be not amenable in the specifications.

In this case, as elsewhere, Becta's judgement on the amenability of learning outcomes is restricted to the purposes of this exercise and should not be interpreted as a requirement or recommendation that they should be taught or supported by ICT-based resources.

Context

For the purpose of fulfilling the DCMS remit, Becta has considered the question of ICT amenability of learning outcomes on a case-by-case basis, in order to judge which learning outcomes are and which are not amenable in this context. Those judged to be not amenable lie outside the scope of the proposed BBC digital curriculum service.

Becta maintains that any judgements reached on the ICT amenability of learning outcomes are made for the purposes of this exercise only and are restricted to use in this context. Any judgements made by Becta do not imply that 'amenable' learning outcomes should be taught by ICT, nor do they imply any view on *how much* ICT is appropriate for any key stage in any subject.

Indeed, Becta recognises that a curriculum should not be learned or taught solely via ICT, as ICT resources alone do not provide the range of learning experiences that amount to a broad and balanced curriculum. Even where it may find a subject to be wholly amenable in relation to the learning outcomes considered, Becta does not wish to suggest or imply in any way that a subject could or should be resourced entirely by ICT. For all subjects, an appropriate balance should be struck between the time pupils spend at the screen and the time spent elsewhere.

In addition, while a learning outcome may be judged amenable, it is still the case that any particular learning or teaching resource developed may or may not be effective and appropriate. Becta strongly recommends that, as it goes forward with its planning, the BBC take account of the advice provided on the National Curriculum in Action website [<http://www.ncaction.org.uk/>].

2b) Statistics at GCSE

The learning requirements for statistics at GCSE are set out in the specifications produced by the relevant awarding bodies. The requirements have been examined for amenability.

Some of the requirements describe a 'holistic' or 'integrated' group of skills. Good pedagogy demands that they should be taught and learned in an integrated fashion, and for the reasons already given (see Section 4.3.4), these skills are not included in the list of learning outcomes against which the 50% would be measured.

The remaining requirements could, in principle, be taught via ICT (though see section on context below).

Measuring 50%

In this subject, the GCSE specifications (syllabuses) produced by the awarding bodies must be used as the basis for the determination of 50%.

Amenability statement

Statistics at GCSE

Based on both the inspection of the learning requirements set out in the specifications and an assessment of the role of ICT in the holistic development of skills in GCSE statistics, Becta finds that there are no outcomes judged to be not amenable in the specifications.

In this case, as elsewhere, Becta's judgement on the amenability of learning outcomes is restricted to the purposes of this exercise and should not be interpreted as a requirement or recommendation that they should be taught or supported by ICT-based resources.

Context

For the purpose of fulfilling the DCMS remit, Becta has considered the question of ICT amenability of learning outcomes on a case-by-case basis, in order to judge which learning outcomes are and which are not amenable in this context. Those judged to be not amenable lie outside the scope of the proposed BBC digital curriculum service.

Becta maintains that any judgements reached on the ICT amenability of learning outcomes are made for the purposes of this exercise only and are restricted to use in this context. Any judgements made by Becta do not imply that 'amenable' learning outcomes should be taught by ICT, nor do they imply any view on *how much* ICT is appropriate for any key stage in any subject.

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In addition, while a learning outcome may be judged amenable, it is still the case that any particular learning or teaching resource developed may or may not be effective and appropriate. Becta strongly recommends that, as it goes forward with its planning, the BBC take account of the advice provided on the National Curriculum in Action website [<http://www.ncaction.org.uk/>].

advice

evidence

standards



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