ADVICE FOR INDUSTRY ON DEVELOPING QUALITY DIGITAL CONTENT FOR SCHOOLS

Drawing on the award-winning software from the BETT Awards 2005 and 2006

http://www.becta.org.uk/industry

Becta

USING THIS BOOKLET

We hope that readers will move from the general policy context, through the specific quality checkpoints and prompts, to an understanding of the individual examples of high-quality, effective products. The end result is a clear picture of why we think certain approaches are successful and what we think will work well in the classroom.

Not all of the quality checkpoints here will be relevant to every product. To make the most of this booklet, you will need to decide what you are trying to achieve with your product, and then focus on the checkpoints that are most relevant to your work. For example, if you are developing software for pupils studying music at Key Stage 2, you might want to focus on the following checkpoints:

- Checkpoint 1 (the National Curriculum)
- Checkpoint 3 (promoting creativity)
- Checkpoint 6 (learning styles)
- Checkpoint 8 (innovative use)
- Checkpoint 10 (accessibility).

We know that suppliers' ultimate aim is to produce a coherent, high-quality product that is suitable for its intended use. We hope that this booklet will help you to achieve that aim.

INTRODUCTION

This booklet aims to help developers to create pedagogically sound, high-quality digital resources that are useful to teachers and that help learners to make good progress. The BETT Awards recognise and reward high-quality ICT products that practitioners can use with confidence, so our starting point has been the products that won BETT Awards in 2005 and 2006.

Award-winning resources have desirable characteristics that make them good models on which to base the development of new software. All the winners we include here met the BETT Awards criteria for fitness for purpose. These standards, which have been arrived at in consultation with subject associations and independent technical moderators, use generally accepted accessibility criteria.

Although Becta does not promote particular products, this booklet highlights products that demonstrate specific points or aspects for which the BETT Award judges are looking. Using the judging criteria from the 2005 and 2006 Awards as a starting point, we have drawn up ten 'quality checkpoints' and a series of prompts for developers to use when planning, developing and trialling their new software. We have illustrated most of the checkpoints by using extracts from winning products, as well as commentary on examples that the BETT judges found to have worked particularly well. As we feel that it is important for developers to understand and respond to the overall policy context in which their software will be used, we have set each quality checkpoint in the context of the Government's overall strategic priorities for promoting effective e-learning in schools.

The Government's e-strategy 'Harnessing technology: Transforming learning and children's services' aims to increase and broaden the demand for e-learning resources. This is intended to encourage investment and innovation by the digital content industry, leading to the creation of flexible, accessible resources that can not only be personalised for individual learners, but also used across all platforms. The e-strategy sets a clear framework within which educational providers and the ICT industry can work together to develop digital resources that will meet these requirements. For the ICT industry, this demands a sound grasp of the needs of the education system, and a clear understanding of what works well in different teaching contexts.

Becta has therefore developed a dedicated website for content developers. The 'Industry and developers' area on the Becta website offers practical advice and online services for everyone involved in designing and producing digital content for education – whether in the public or private sector, and whether the content is for schools or the learning and skills sector.

Becta has also published a set of quality principles for digital learning resources. We believe that ICT can enhance the learning and teaching experience for everyone, but only when ICT resources are of high quality. Any decision to create and use digital learning resources should be underpinned by accepted principles of good teaching and learning.

The quality principles are intended to support practitioners' and designers' thinking about fitness for purpose and about the educational purposes to which digital learning resources may be applied. The development of the principles has drawn on experience from the BETT Awards judging process as well as through consultation with the developer and practitioner communities. The quality principles are now published and additional supporting materials will be made available over time.

Where text is in blue, you will find the relevant web address in the **Useful Links** section on page 26.

THE QUALITY CHECKPOINTS

1. **How will your product be relevant to the National Curriculum?**
2. **How will your product offer clear learning objectives and intended outcomes?**
3. **How will your product provide opportunities for promoting creativity?**
4. **How will your product support inclusive practice?**
5. **How can you make your product engaging and motivating?**
6. **Will your product support a range of effective learning styles?**
7. **Will your product support a range of effective teaching styles?**
8. **In what ways will your product support innovative use?**
9. **Does your product support higher order thinking skills?**
10. **Does your product meet high accessibility and technical standards?**

QUALITY CHECKPOINT 1

How will your product be relevant to the National Curriculum?

The UK has four national curricula – one each for England, Northern Ireland, Scotland and Wales. Although all four share some terminology and concepts, there are important differences between them.

This booklet covers the BETT individual subject awards and the primary and secondary software awards only. For the subject awards, the National Curriculum for England is relevant. For the more general award categories (such as the award for 'Early years and primary software, content and tools'), products developed in the context of all four curricula are eligible. Developers should therefore always refer to the relevant authority for the curriculum context of their work. For Northern Ireland, this is the Council for Curriculum Examinations and Assessment. The Scottish curriculum is overseen by Learning and Teaching Scotland. The National Curriculum for Wales can be accessed at the website of the Qualifications, Curriculum and Assessment Authority for Wales.

Curriculum reviews take place every so often, so stay up to date by looking at the curriculum sites or keep in touch with the Becta content developers' website. Northern Ireland has recently under gone a curriculum review and Scotland is undergoing one now. See A Curriculum for Excellence for progress on the Scottish review. In recent reviews there have been moves from a content-based to a competency-driven curriculum.

Subjects in the National Curriculum for England have three statutory elements:

- Programme of study – this specifies what pupils should be taught in each subject at each key stage (teaching requirements), and the activities and experiences that should be available to pupils (breadth of study)
- Attainment targets – these set out the knowledge, skills and understanding that pupils are expected to reach for each key stage
- Level descriptors – these measures indicate attainment: for example levels 1–8 for the attainment target for English 1 (speaking and listening).

Cutting across these are four general teaching requirements:

- Inclusion
- Language
- ICT
- Health and safety.

The principles of the National Curriculum are also embedded in the following frameworks:

- National Literacy Strategy
- National Numeracy Strategy
- Primary National Strategy
- Key Stage 3 National Strategy.

The literacy and numeracy strategies (to be revised in the latter part of 2006) and general teaching requirements are designed to help teachers to improve the learning and teaching of these subjects for all pupils. The Primary Strategy in Key Stages 1 and 2 and the Key Stage 3 Strategy apply to the core subjects for those age groups.

If you are developing products for Foundation Stage (pupils aged between three and five years), you will also need to take into account the following:

- Stepping stones – the knowledge, skills and understanding children need for foundation stage subjects
- Early learning goals – these are 'soft' targets for each subject and can be found in Curriculum Guidance for the Foundation Stage.

The Qualifications and Curriculum Authority (QCA) has also produced non-statutory schemes of work for teachers. Closely referenced to the National Curriculum, these schemes of work provide support and guidance to teachers who are planning lessons. As part of the flexibility provided for within the curriculum, many local authorities provide their own schemes of work which the schools can use. It may be useful to check this out in your area.

For developers, these components provide a helpful foundation for planning and checking curriculum alignment. Teachers and managers in schools need products that not only match the relevant curriculum, but also show clearly how they can be built into the schemes of work to offer added value and help teachers to deliver their objectives.

Once you have established that your product is fully in line with the appropriate parts of the relevant curriculum and strategies, you need to think about how it will support teachers' use and understanding of them.

PROMPT QUESTIONS FOR DEVELOPERS

Will your product...

- clearly identify links to key stages, attainment targets, programmes of study and levels in the relevant national curriculum?
- cover the key objectives of the National Literacy and Numeracy Strategies?
- if for foundation stage pupils, cross-refer to stepping stones and early learning goals?
- have a clear focus on a specific aspect of one programme of study in sufficient detail or on supporting general teaching of a particular subject, or does it follow a competency strand or skill over a development period?
- enable teachers to introduce, consolidate and revise key elements in the national curriculum topics with their pupils?

EXAMPLES

Example 1.1: Easiteach Literacy
BETT Award Winner 2005: English Key Stages 1 and 2
The index for *Easiteach Literacy* offers materials linked to the national curricula for England, Wales and Scotland. Lesson activities are organised by suggested year and term.

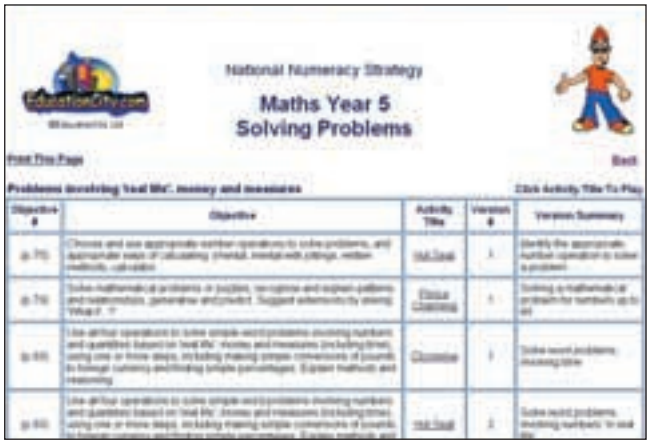
Noting that the *Easiteach* materials conformed to the National Curriculum standards, the judges commented positively on the use of writing frames linked to key stages.

In the same software, teachers have the facility to drill down to find suggested lessons and activities by year group and term. Lesson activities clearly state which National Literacy Framework objectives they meet, as in the following screen shot for Year 2 Term 2.

The judges liked the way the software supported the National Literacy Strategy and commented that the software was wide ranging in its selection of material.

Example 1.2: Education City
BETT Award Joint Winner 2006: Maths Key Stages 1 and 2
Education City links all its activities to objectives in the National Curriculum. By clicking on the curriculum map, choosing a subject and then a key stage or year group, you reach a screen showing the different themes for the subject – as shown below.

Selecting a theme links through to the section with the relevant National Numeracy Strategy objective and activity titles.



The judges commented: 'It had a major strength of a curriculum-matching chart which was hyperlinked.' When clicked, this leads from the objective in the Numeracy Strategy directly to the relevant activities. There is also a search facility that enables the use of keywords to locate topics and activities.

The judges also remarked: 'Its wealth of material supported areas that could be considered difficult to teach.'

The judges noted: 'On the children's menu the activities and games were colour coded by strand, giving pupils a form of curriculum matching.' They could drill down through the key stages and year groups into the colour-coded themes (as shown above).

Example 1.3: Graphical Logger Pack – Data Harvest
BETT Award Winner 2006: Science Key Stages 3 and 4
The judges considered that, in its intended use, the *Graphical Logger Pack – Data Harvest* had 'excellent links to the National Curriculum' and provided features needed for experiments linked to specific areas of the Key Stage 3 and Key Stage 4 science curriculum. The portability of the *Logger Pack* facilitates the use of these features for each pupil.

Example 1.4: Easiteach Maths
BETT Award Winner 2005: Maths Key Stages 1 and 2
In another example of a product intended to link to the curriculum, the judges found that the *Easiteach Maths* content pack showed the software to link directly to the National Curriculum.

QUALITY CHECKPOINT 2

How will your product offer clear learning objectives and intended outcomes?

PROMPT QUESTIONS FOR DEVELOPERS

Will your product...

- include clear learning objectives linked to the relevant national curriculum, literacy or numeracy strategy and, if for foundation stage pupils, stepping stones and early learning goals?
- have objectives that are specific, achievable, challenging and capable of being measured and assessed, both formatively and summatively?
- include notes that will let teachers search for objectives in a variety of ways (for example, by key stage, age and programme of study)?
- make objectives and outcomes accessible to teachers and to pupils – for example by translating them into pupil-friendly language or making them capable of being personalised for individual learners, with differentiated tasks for pupils of different abilities.

The best e-learning resources fit in with teachers' plans for suitable and specific learning objectives that clearly set out the purpose of a particular activity in class. They also enable independent learners to make choices about their next learning goal. Effective objectives build on individual pupils' knowledge, experiences, interests and strengths. They are attainable, yet challenging enough to see pupils make progress in their learning. They also address areas of weakness and look for ways of building self-esteem and confidence – something that ICT is ideally suited to do.

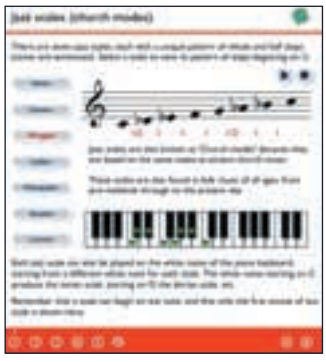
You can find examples of key objectives that teachers in England use on the National Curriculum in Action website, which is searchable by subject and key stage.

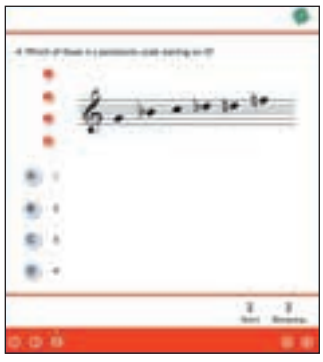
By contrast, learning outcomes state – in the context of the relevant national curriculum and national literacy and numeracy strategies – what the pupil is expected to achieve. To create effective learning outcomes, teachers will have used assessment to establish a baseline for each pupil. It is only by doing this that learning outcomes can show that a pupil really has made progress. Assessment itself is an area in which digital resources have a significant part to play.

EXAMPLES

Example 2.1: Sunflower Biology Suite
BETT Award Winner 2005: Science Key Stages 3 and 4
The judges found that the introduction to each activity in the *Sunflower Biology Suite* set out what pupils would learn. Using the same instructional text, worksheets are categorised for core learning, support or extension, with the aim of letting pupils of different abilities work to different objectives on the same material. The judges found that the product 'clearly stated the aims and objectives'.

Example 2.2: Sibelius Compass
BETT Award Winner 2005: Secondary Software, Content and Tools
The progressive steps and tasks in *Sibelius Compass*, with their defined objectives as set out in the teacher handbook that comes with the software, gradually build up pupils' knowledge. Lessons, worksheets and self tests cover a range of topics from melody and rhythm to dynamics and form. Then another part of the program, *Sibelius Tracker*, allows pupils to record and develop their own musical ideas.





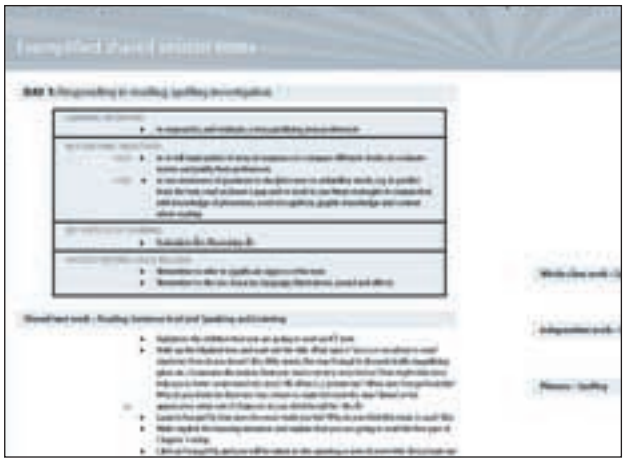
The judges described this product as 'highly structured with clear progression'. The pictures show a sample of a structured, progressive activity that results from one of the learning objectives.

Above is the interface of *Sibelius Tracker* where pupils can put their learning from the tasks to use in free composition.

Example 2.3: MathsAlive
BETT Award Winner 2005: Maths Key Stages 3 and 4
The judges commented: 'This product offered very clear learning objectives and delivered the intended outcomes.' They said that the product delivered the concept of starters and plenaries in particular.

Example 2.4: Mathematical Toolkit
BETT Award Winner 2006: Maths Key Stages 3 and 4
In *Mathematical Toolkit* the judges liked the accompanying detailed downloadable handbook, which includes some useful teaching ideas – some aimed at the teaching and some designed as challenges for the pupils. They said: 'ICT added value here to the mathematical objectives in terms of quickly drawing functions, graphs and a range of 2D shapes (and transformations of them).'

Example 2.5: Longman's Digitexts – Feargal Fly: Private Eye
BETT Award Winner 2006: English Key Stages 1 and 2
Feargal Fly: Private Eye gives exemplification of clear learning intentions and teaching objectives together with success criteria. The program demonstrates how ICT adds value to the delivery of particular objectives by transforming texts.



The judges commented that the 'inclusion of the learning intention and success criteria enabled progress'.
With regard to flexibility and structured tasks, the product is supportive yet open-ended enough to encourage the learner to be in control, explore and make decisions. The judges commented on the 'appropriate levels of exploration with [the character] leading'. The pupil is invited to make decisions, as demonstrated in the picture below, but within a carefully structured programme that does not divert from the objectives.

QUALITY CHECKPOINT 3

How will your product provide opportunities for promoting creativity?

ICT can offer unique opportunities for stimulating imaginative and creative learning. When a product has been developed for an e-learning environment, this does not guarantee, however, that it will promote creativity. For the product to work well, it must also be clear and purposeful, or the software must provide opportunities for the teacher to use it in setting tasks that are clear and purposeful and that add value in delivering the learning aims.

The Government has published guidance on promoting creativity in the classroom, which content developers may find useful when developing products. The QCA has also explored with teachers ways for schools to promote creativity at Key Stages 1, 2 and 3.

PROMPT QUESTIONS FOR DEVELOPERS

Will your product...

- stimulate curiosity in pupils, leading them to ask questions?
- allow pupils to change the direction of their enquiry in personal and flexible ways?
- have a good range of tools and tasks to support different approaches and solutions?
- encourage pupils to have ideas or reach conclusions that are new to them?
- give pupils the opportunity to express their ideas and answers in a variety of ways, including speech?
- encourage a wide range of imaginative pupil responses and strategies, including risky or subversive ones?
- produce outcomes that recognise pupils' creative input in attaining them?
- help pupils to question and reinterpret things they already know?

EXAMPLES

Example 3.1: KnowledgeBox
BETT Award Winner 2005: English Key Stages 1 and 2
KnowledgeBox includes a stimulating lesson on haiku poetry that aims to encourage pupils to combine and adapt words and images freely, and includes a facility and scaffolding to add new words. This was the sort of example found in this software that prompted one judge to comment that it 'would encourage pupils to explore themes independently and safely'.

Example 3.2: Kar2ouche Twelfth Night – Immersive Education
BETT Award Winner 2005: English Key Stages 3 and 4
Kar2ouche Twelfth Night takes pupils beyond the context of the play and encourages them to investigate concepts such as character motivation, deception and intention. In the following illustration, pupils are asked to complete thought bubbles to show what they imagine the characters are thinking and feeling at key moments in the scene as it is animated (the activity is accompanied by an audio text of the play).

The judges described the product as having 'huge opportunities for creativity' and offering 'open-ended potential outcomes'. The same product aims to extend learners' understanding of the characters' motivation by offering open-ended interviews with individual protagonists. In the following illustrations of an interview with Sir Toby Belch, pupils are prompted by a question in the first shot, and then asked to supply an answer on behalf of Sir Toby in the second.

The judges praised this 'creative approach to the text'. With the full text of Shakespeare's play available in audio and visual modes, the product also allows pupils to stage the play using aspects of the source text in entirely original ways. In the following activity, students are asked to create a storyboard and audio file of a 'missing scene', using the scaffolding provided by the props, characters and text of the play.

Commenting on this aspect, one judge said that such open scaffolded tasks allowed for 'a wide range of pupil responses, including subversive ones'.

Example 3.3: Mediastage – Immersive Education and Harcourt Education
BETT Award Winner 2006: Secondary Software, Content and Tools
The judges thought that *Mediastage* 'met all the [creativity] criteria' requirements in the BETT Awards 2006, so providing opportunities for young people to pursue their interests and talents; enhancing their critical thinking, communication and problem-solving skills; and opening up new and innovative ideas.

In this 3D animated learning environment pupils can set up cameras and lighting (see picture below), developing practical skills and demonstrating their understanding of theory.

They can choose characters, decide on expression, gesture and movement for the characters, set the text and have the characters speak the text.

They can record, play back performances and modify their creations or make use of pre-recorded material.

The program demonstrates creative approaches to language and tasks, and affords pupils opportunities to express their ideas in a variety of ways.

QUALITY CHECKPOINT 4

How will your product support inclusive practice?

PROMPT QUESTIONS FOR DEVELOPERS

Will your product...

- offer ways of differentiating activities according to the individual needs and abilities of pupils?
- use or develop several sensory abilities, such as hearing, sight and touch?
- enable pupils to demonstrate understanding and achievement in ways that might not be possible with traditional learning methods?
- encourage and enable learner autonomy – for example by varying the pace, through scaffolding (props that encourage pupils to become more independent) or by allowing different starting points or routes through the learning resources?
- have a clean, clear and pupil-friendly interface, with high-quality graphics, good visual and auditory clues, adaptable navigation tools and customised colour, sound, font size and so on?
- provide good physical access or alternatives for pupils with restricted mobility?
- allow pupils to use their own access technologies such as switches and screen readers?
- offer challenging extensions for more able pupils?
- include the opportunity for extended learning at home?
- offer evidence of diversity and avoid bias and stereotyping?

Developing an inclusive curriculum is a statutory requirement of the National Curriculum for England and is also relevant to the curricula for Northern Ireland, Scotland and Wales.

You can find advice on the inclusion agenda, which seeks to promote equal educational opportunities for all, on Inclusion supporting individual learning needs. From Becta's point of view, inclusive learning can be understood as a process of increasing the presence, participation and achievement of all learners. It may therefore be necessary to consider the particular needs of groups of learners such as pupils with disabilities and special educational needs, pupils who are gifted and talented, and pupils who are disaffected, excluded or from disadvantaged communities. You can find out about aims to challenge stereotypes, prejudice and discrimination in education in QCA's 'Respect for all: valuing diversity and challenging racism through the curriculum'.

A study on cultural diversity by Becta, 'Celebrating cultural diversity: Netdays report', available from Becta publications, illustrates the many ways in which ICT can promote understanding between different cultures and ethnic communities, while at the same time enabling effective and inclusive learning.

In this sense inclusive learning can be seen as a form of personalising learning, a process in which ICT can play a key supporting role (see the DfES Standards Site pages on personalised learning). The Government's e-strategy regards technology as 'the key to personalised learning'. It makes a commitment to provide seamless support for assistive technologies to meet learners' and children's special needs. In order to deliver personalised learning, teachers will be increasingly looking for products that they can adapt to individual needs. For example, a product that can be personalised in terms of sensory experience (sound, vision, touch) opens up opportunities for learners who have certain disabilities, and is likely to be more useful than a product that only operates in one way. Even simple adaptations, such as colour overlays for dyslexic learners, audio functions or adjustable text size and scrolling, can make a big difference to the learning experience.

Similarly, learners with special educational needs will need the flexibility to complete some tasks at their own pace because of the demands being made on their concentration. More information on this can be found on the Becta website under Becta's Software for schools seminar and from the BETT Awards quality criteria on supporting inclusive practice.

In some ways, gifted and talented pupils and those who are disengaged share similar issues. Teachers need resources that will maintain interest and motivation, encourage self-esteem and easily adapt to different paces and challenges in learning.

The Special Educational Needs and Disability Act (SENDA) requires that students with disabilities are not discriminated against in their education. Institutions are expected to plan ahead, and where necessary make reasonable adjustments to meet the needs of current students with disabilities. This includes the built and learning environment.

Learners who speak English as an additional language (EAL) may require special treatment regarding cultural sensitivity. They may also need specially created materials, as their understanding may exceed their ability to express themselves in English, and certain older learners in this group have 'spiky' ability profiles. This means that they may have varying levels of ability across the four language proficiency areas – listening, reading, speaking and writing. For example, a learner may have a higher proficiency in speaking and listening than in reading and in writing.

EXAMPLES

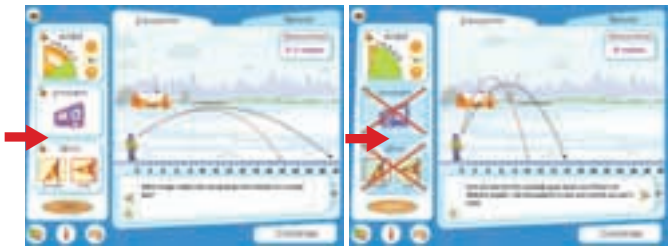
Example 4.1: KnowledgeBox
BETT Award Winner 2005: Early Years and Primary Software, Content and Tools
KnowledgeBox offers teachers a suite of symbols that can be used to associate words with particular actions. The judges considered this particularly helpful for pupils without speech or for interactive group work.

The judges commented favourably on the reading support offered through the use of audio text, and on the printable materials which can be adjusted for font, colour and so on.

Example 4.2: Easiteach Literacy
BETT Award Winner 2005: English – Key Stages 1 and 2
Easiteach Literacy has facilities for handwriting on a whiteboard or graphics tablet. It also offers simple on-screen facilities such as switching the position of toolbars to the left or right, pop-up toolbars and keyboard, highlighting and freehand pencil, and speech and recording facilities that can be dragged over the words. The judges found this product 'easy to navigate' and described the on-screen instructions and visual clues, such as the facility to spotlight words and syllables, as particularly helpful.

Example 4.3: Maths-Whizz Teachers' Resource
BETT Award Joint Winner 2006: Maths Key Stages 1 and 2
The judges thought this product provided activities that could be matched to individual learning needs, providing scaffolding to support learning for all abilities of learners. The product gives clear demonstrations via simulation of exactly what is required in given tasks together with different levels of work. In addition, audio support is included to assist those with reading difficulties. Activities and tasks can be matched carefully to pupils' developmental stage, making the resource engaging and motivating.

Example 4.4: Simulation Explorer – Granada Learning
BETT Award Winner 2006: Science Key Stages 1 and 2
Simulation Explorer supports inclusive practice – for example, the judges said: 'Speech [was] used effectively' – and the product uses a variety of media. 'The high quality of animation was both stimulating and instructive,' said the judges. It has colourful high-quality graphics with clear picture metaphors in the form of padlocks for locking down variables, where the pupil chooses, before running the simulation.



The challenge button opens up a harder task for those that have advanced their learning and can put their theories to the test.

The judges liked the 'clear results page using diagrammatic and numerical representation'.

The provision of clip art from the simulation program enables the teacher to make additional work tasks for varying abilities, so offering extensions via the same theme.

The judges said the 'clip art [was] useful for tailor-made additional resources'.

QUALITY CHECKPOINT 5

How can you make your product engaging and motivating?

PROMPT QUESTIONS FOR DEVELOPERS

Will your product...

- use a variety of media, including high-quality audio-visual materials and lively texts, sounds and images, to break down resistance to learning, especially among boys and disaffected learners?
- provide relevant learning activities and tasks that are appropriate for the key stage and age group?
- present opportunities to build pupils' confidence and self-esteem?
- offer interaction in group work and pair work as well as opportunities to work independently?
- include ways of recording learning so that pupils can see that they are making progress?
- have different entry routes and differentiated tasks to cater for individual interests and to avoid boredom and loss of concentration?
- give useful, effective feedback to the learner in support of the learning objectives?
- offer all pupils a stimulating, challenging and rewarding learning experience?

ICT presents terrific opportunities to engage and motivate pupils in learning, particularly when practitioners use it effectively. Even when supplementing traditional methods, ICT can help to engage pupils on a number of different levels. What is more, research by the DfES on the motivational effect of ICT on pupils and Becta's educational research into ICT and pupil motivation – a selection of abstracts indicates that, used effectively, ICT can have a particularly positive effect on behaviour, motivation, truancy and associated crime among disaffected or disengaged pupils. That having been said, a product should not contain superficial gimmicks which detract from the learning. It must have a clear learning purpose and value.

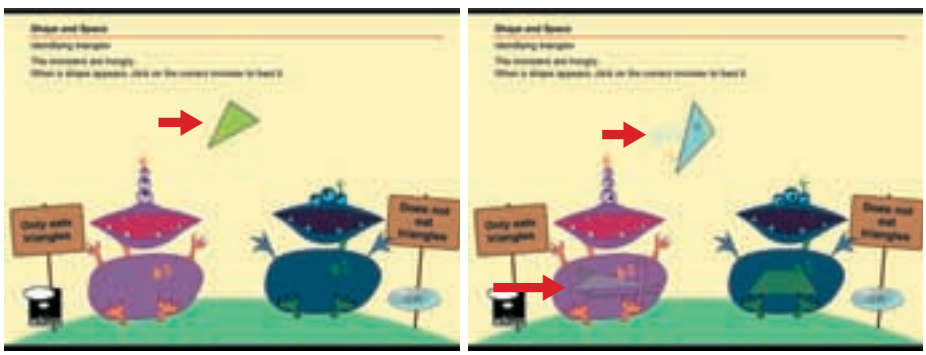
The Futurelab 2005 handbook 'Games and learning' says: 'Players need to be absorbed in meaningful activities whose aims and goals they clearly understand and the accomplishment of which stretches their current competence.'

Features such as animation, digital video or image manipulation should be capable of being harnessed by the teacher to press home a useful learning point. Digital video may be used to invite the participation of the learner by providing a narrative setting and characterisation, and then engaging the learner personally in the tasks that follow.

EXAMPLES

Example 5.1: Maths-Whizz Teachers' Resource
BETT Award Winner 2006: Maths Key Stages 1 and 2
The judges found that the *Maths-Whizz Teachers' Resource* could be matched carefully to pupils' developmental stage, making the resource engaging and motivating, and offering good potential for increasing self-esteem and confidence.

The judges said the 'screen design was imaginative and the graphics appealing. ... Each section provided a clear demonstration of what was required and there was a wide variety of activities included in the program.'



In this activity pupils have to decide which shapes are triangles and which are not. After a demonstration of what constitutes a triangle, the pupils' task is presented. When the animated shape appears, they need to click on the correct monster to eat the shape. The shape is then visible in the monster's stomach.

The judges remarked that 'the software modelled good strategies for arriving at solutions and animations which the children would enjoy'.

Example 5.2: Science Clips – BBC Schools Online
BETT Award Winner 2005: Science Key Stages 1 and 2
The *Science Clips* website, which complements the BBC series of that name, is designed to support or supplement practical work in the classroom. The variety of activities on different topics links to science national curricula in primary schools and could be used in school or at home. The attractively presented animations are both engaging and motivating.

The judges commented that the animations were 'good and supportive'. Here the learner activates the earth moving around the sun and sees the association between the movement and the length of time taken.

They also said: 'We particularly liked the audio and feedback.' The presence of both these supports the learning experience to create a stimulating and rewarding interaction.

The picture above shows how different objects could be put into the shadow; the light source could be made dimmer or brighter, or moved nearer to the object or farther away. The angle of the beam of light could be varied. The judges said: 'All parts of the product were made for interactive use. Excellent use was made of [this facility].'

Example 5.3: Simulation Explorer – Granada Learning
BETT Award Winner 2006: Science Key Stages 1 and 2
The judges considered *Simulation Explorer* to have colourful, clear presentation. The software is easy to navigate and intuitive for teachers and pupils alike. The judges found the high quality of animation both stimulating and instructive, citing in particular the example of the snowball activity, which showed results in a very visual, clear way.

Example 5.4: Kar2ouche Twelfth Night – Immersive Education
BETT Award Winner 2005: English Key Stages 3 and 4
The judges particularly commented on the effect in *Kar2ouche Twelfth Night* of text, video and audio combinations, plus the facility to edit video and manipulate graphics. The judges found that everything supported the pupils' interaction with text and audio.

QUALITY CHECKPOINT 6

Will your product support a range of effective learning styles?

PROMPT QUESTIONS FOR DEVELOPERS

Will your product...

- enable teachers to adapt activities to suit explicit learning styles?
- let teachers know what it is good at and will it enable differentiation of resources to accommodate differences in ability and pace?
- offer opportunities for interactive work as a whole class or in small groups, as well as for pair work and independent work?
- encourage peer collaboration and discussion?
- use a good variety of text, speech, sound, images and so on to encourage pupils with different learning styles to contribute and learn?
- include summaries, key words and reinterpretations of materials in a variety of formats?
- encourage learners to identify and exploit their preferred learning styles?

There are a number of theories and opinions on learning styles. The Becta industry and developers' website contains some useful articles on educational design, including an introduction to the main theories.

Most practitioners recognise four main learning styles:

- visual and verbal
- visual and non-verbal
- tactile and kinaesthetic
- auditory and verbal.

Pupils tend to use a mixture of learning styles – with a preference for one or two styles, depending on the context. Teachers therefore require resources that they can adapt to suit their learners' preferences. It is important for developers to provide resources that are effective for teachers or for learners: sometimes resources that are targeted directly at learners only as well as at teachers plus learners suffer by trying to satisfy both categories.

When teachers recognise and respond to the different learning styles of their pupils, this provides excellent opportunities for elements of personalised learning. Learning resources need to be highly adaptable in order to suit the preferences of different learners.

EXAMPLES

Example 6.1: Stagework – National Theatre [**http://www.stagework.org.uk**]
BETT Award Winner 2006: English Key Stages 3 and 4
The judges thought the amount of material supplied by this resource did not restrict students to particular learning pathways and approaches. The depth of the resource – practical and detailed, the wide range of approaches to the text and notes, and documentation providing abundant information on many aspects of the resource – allows teachers and learners to create their own activities. The website is highly engaging for learners interested in pursuing careers in the performing arts, but is also equally valid for a wealth of cross-curricular learning.

This screen shot shows some of the different aspects treated in the resource with which the pupils can interact.

Stagework provides the resources in different formats, including video, scripts and background material for pupils to tackle from a variety of perspectives. Extended resources – for example on Henry V, where there is a unit on the language of persuasion – give scope for high-level engagement with language.

The written script is offered, together with video of the performance, actors talking about characters, directing techniques and method of delivery.

The resources can be used for pupils to reflect, discuss and prompt learning at a deeper level. Many issues are addressed through drama and offer the pupils something that they cannot see in production books.

Example 6.2: Science Clips – BBC Schools Online
BETT Award Winner 2005: Science Key Stages 1 and 2
In *Science Clips*, the judges thought that the use of the various media and the good navigation and feedback offered support for effective learning styles.

Example 6.3: 2Create A Story – 2Simple Software
BETT Award Winner 2006: Early years and primary software, content and tools
In *2Create A Story*, judges thought that pupils could further their learning using their own choice of media, whether this was sound, motion, pictures or text. Work created can be easily revisited and modified. The fact that a pupil can add their own voice gives a sense of ownership and personal participation in the action.

QUALITY CHECKPOINT 7

Will your product support a range of effective teaching styles?

PROMPT QUESTIONS FOR DEVELOPERS

Will your product...

- support a variety of teaching styles, especially those that develop higher-order thinking, problem solving and skills for evaluating evidence?
- offer a range of question types, including closed, open, product and process questions?
- help teachers to use strategies that encourage pupils to overcome barriers to learning, including emotional or psychological blocks?
- offer good opportunities for a range of collaborative and interactive work – for example in groups, in pairs or for the whole class?
- create good conditions for motivating and rewarding learners?
- help teachers to create coherent lessons and activities – for example by providing adaptable lesson plans, user manuals, technical support and comprehensive notes?

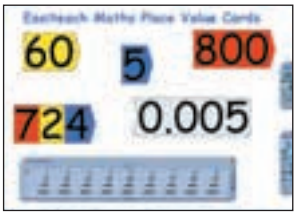
The advent of ICT learning resources in schools is affecting the way in which teachers approach their subjects. The emphasis on personalised learning in the Government's e-strategy is encouraging teachers to treat as a priority the careful tailoring of resources and tasks to pupils' individual strengths and weaknesses following on from formative assessment tasks. Teachers may need to further expand their repertoire of styles, using a range of whole-class teaching, group work, pair work and individual tuition.

Teachers are therefore seeking flexible products that encourage new ways of approaching and teaching topics. You will need to supply full accompanying documentation describing your product, how to use it, who it is for and the added value it can bring to a subject. The best recommendations are going to be from people who have used your product, so include some evaluations that will help guide future purchasers. Recommendations and evaluations alongside clear guidance manuals, comprehensive teacher notes and adaptable lesson plans are also particularly helpful for newly-qualified teachers.

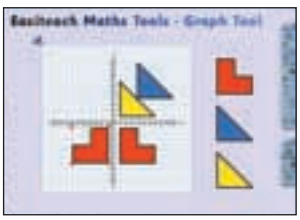
Tasks that focus on key learning outcomes are helpful to busy teachers. The resource should also encourage teachers to reflect on their teaching styles and methods.

EXAMPLES

Example 7.1: Easiteach Maths
BETT Award Winner 2005: Maths Key Stages 1 and 2
Easiteach Maths has a bank of versatile interactive resources, making it possible for teachers to select and generate activities quickly and tailor them to match their aims and intended teaching approach. For whole-class teaching it is a tool offering a visual perspective that encourages pupils to maintain their focus, as well as being kinaesthetic for pupils to access and manipulate numbers.



The place value cards here on the left could easily be assembled or disaggregated to demonstrate the values of the different numbers. Readily available tools provided for whiteboard use by the teacher mean easy and quick preparation for different teaching approaches.

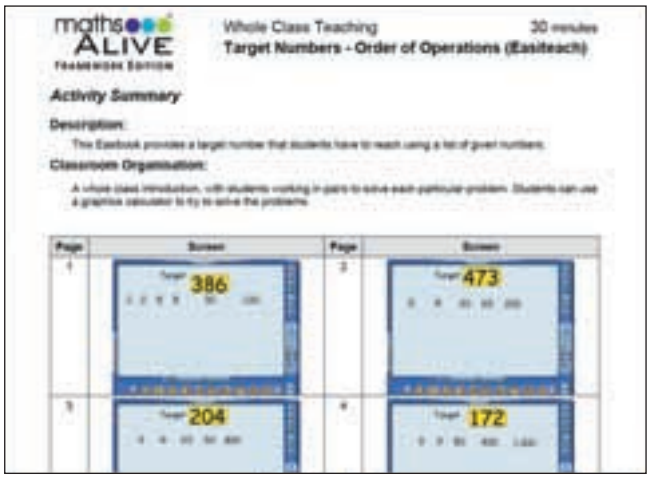


The judges felt that it was 'ideal for all sessions, from whole-class to small-group, with teachers or classroom assistants' and described it as an 'ideal set of resources to enhance planned delivery' and one that 'being interactive, could involve students'. The above example illustrates the quick and easy use of tools to show transformation.

Example 7.2: MathsAlive

BETT Award Winner 2005: Maths Key Stages 3 and 4

The teacher notes for *MathsAlive* suggest how to organise the classroom for each activity – for example as a whole-class activity, or for pair work or independent work. The notes also suggest how pupils might work and what tools they could use, as illustrated here, where a graphics calculator is suggested.



The judges liked the 'carefully constructed materials that are at an appropriate level' and added: 'the easy-to-use planning tools enable teachers to prepare effective lessons.'

Example 7.3: Education City

BETT Award Joint Winner 2006: Maths Key Stages 1 and 2

The judges described *Education City* as offering a good range of activities between individual and whole class. It is interactive and engaging on the whiteboard for whole classes, and pupils can follow up on activities in pairs or groups. The judges commented that 'it brought fun into the classroom'. They thought the main use was in supporting a lesson-linked activity and that it provided plenty of reinforcement.

In addition, the judges said it offered the teacher the 'ability to set up individual pupil profiles and an extensive range of options for the teacher to customise the program'. The 'tracking feature enabled individual target setting' and the 'software stored pupil records which could be accessed at the next log on'.

QUALITY CHECKPOINT 8

In what ways will your product support innovative use?

PROMPT QUESTIONS FOR DEVELOPERS

Will your product...

- offer opportunities to structure the sequence in which the resource is used to match the teacher's needs?
- use a range of methods (such as visual, animated and aural) to stimulate original thinking among pupils?
- include good technical support to help teachers get the best use from the resource?
- change the relationship between teacher and learner to encourage mutual respect and discovery through learning?
- sustain a focus on the imaginative use of the materials, but avoid gimmicks that serve no useful purpose?
- promote experimentation and encourage risk taking?
- involve learners in developing their own learning strategies?
- make creative use of ICT tools such as digital imagery, animation, sound manipulation, live internet links and messaging?

In her foreword to the 2005 e-strategy, the former Secretary of State for Education, Ruth Kelly, underlines the potential of ICT to encourage imaginative learning that engages even reluctant learners in developing useful and complex skills, gaining in confidence and ambition as a result.

Increased self-assurance often enables pupils to acquire knowledge and understanding in a wide variety of ways. By giving pupils greater control and understanding of their work, ICT tools can encourage self-discipline and self-confidence. In some instances, by shortening the processes of repeated practical experimentation, ICT can free up more time for developing the important higher-order skills through 'what if...' discussion scenarios between pupils and their peers, and between pupils and teachers.

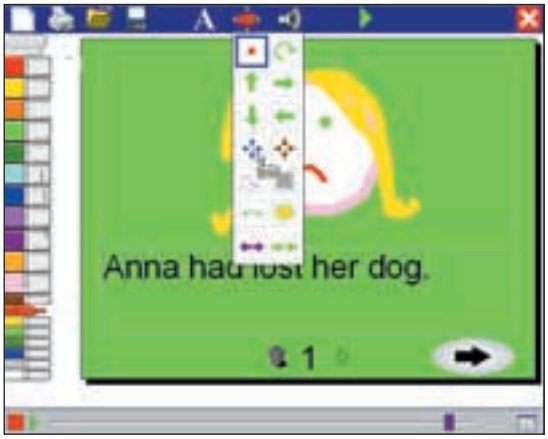
Similarly, good ICT resources allow teachers to adapt their teaching in truly creative ways. By making it possible for them to customise software – for example by recording their own voice, sounds or images, or by altering the pace or sequence of activities – teachers can adapt the materials to suit their intended learning outcomes. Innovative use of ICT such as this is also likely to support personalised learning by helping teachers create tailored activities that suit particular pupils, groups, activities or topics. Very specific software for specific objectives has its place, but flexible software can facilitate innovative approaches.

EXAMPLES

Example 8.1: 2Create a Story – 2Simple Software
BETT Award Winner 2006: Early years and primary software, content and tools
This software, which is open-ended, supports Foundation Stage and Key Stage 1. It covers a range of areas and offers flexibility for cross-curricular use. The product could be used either as a whole-class tool on the interactive whiteboard to model story writing, or to adapt, revisit or modify work, or by individual pupils with tools to personalise their work, giving them the opportunity to feel an added sense of ownership.

In *2Create a Story* young pupils can focus on the imaginative use of tools and experiment. The interface is simple and intuitive, and pupils can use visual, aural and animated methods to stimulate original thinking.

They can draw a picture and add text.



They can add animation.

They can record their own voice or sounds.

The judges commented that its 'ease of use allowed pupils to succeed'.

Example 8.2 Graphical Logger Pack
BETT Award Winner 2006: Science Key Stages 3 and 4
The judges found this *Graphical Logger Pack* to be mobile and transferable. It comes with equipment for recording temperatures on graphs, or equipment to be used in sound experiments.

It is quick to use, preconfigured for school use, and it speeds up practical work. It enables students to collect, display and analyse the data and write reports. Its Bluetooth capability is compatible with PCs and can be used remotely at distances of up to 10 metres. The pack includes applications like Word and Excel.

The judges said that the recording functions and drawing of the appropriate graphs, when activated, were innovative. The speeding up of repeated practical experiments can also facilitate time for more in-depth discussions at higher levels with the teacher.

Example 8.3: Mediastage – Immersive Education and Harcourt Education
BETT Award Winner 2006: Secondary Software, Content and Tools
The judges thought that *Mediastage* had the 'wow factor'. The creative aspect of this resource allows for creativity in teaching as well as learning, and the judges welcomed the audio input.

Example 8.4: Longman Digitexts – Feargal Fly: Private Eye
BETT Award Winner 2006: English Key Stages 1 and 2
Feargal Fly presents the treatment of a text in innovative ways. Not only does the learner instigate the route through the resource with Feargal's encouragement, but there is also the facility to make notes, to bookmark information, text and chapters for review, and to highlight text. The judges said: 'Notes supported the notion of challenge and the nature of the product encouraged exploration.'

QUALITY CHECKPOINT 9

Does your product support higher-order thinking skills?

PROMPT QUESTIONS FOR DEVELOPERS

Will your product...

- allow challenges to be set that further thinking skills and deductive reasoning?
- offer opportunities for problem solving or testing 'what if...' scenarios?
- produce the realisation that some situations/simulations could effectively build on life experiences?
- address ideas and issues in a way that extends learning beyond the current immediate learning objective to provoke thoughts on issues when pupils are away from the computer?

This criterion was introduced for the BETT 2006 Awards. It includes higher-order thinking skills and problem solving.

The design and technology at Key Stage 3 teacher's guide sets out what we mean by higher-order skills and gives examples.

'Thinking skills' and related terms are used to indicate a teaching approach which emphasises the processes of thinking and learning that can be used in a range of contexts. The list of thinking skills in the English National Curriculum encompasses information-processing, reasoning, enquiry, creative thinking and evaluation.

Information-processing skills enable pupils to locate and collect relevant information; to sort, classify, sequence, compare and contrast; and to analyse part/whole relationships. Reasoning skills enable pupils to give reasons for opinions and actions, to draw inferences and to make judgements, to use precise language to explain what they think, and to make judgements and decisions informed by reasons or evidence. Enquiry skills enable pupils to ask relevant questions, to pose and define problems, to plan what to do and how to research, to predict outcomes and anticipate consequences, and to test conclusions and improve ideas. Creative-thinking skills enable pupils to generate and extend ideas, to suggest hypotheses, to apply imagination and to look for alternative innovative outcomes. Evaluation skills enable pupils to evaluate information; to judge the value of what they read, hear or do; to develop criteria for judging the value of their own work and others' work or ideas; and to have confidence in their judgements.

On the Standards Site you can find the Government's strategy on thinking skills for the primary classroom.

Pupils should be given adequate time for reflection. If they are able to make connections with their prior knowledge, their understanding is more likely to increase.

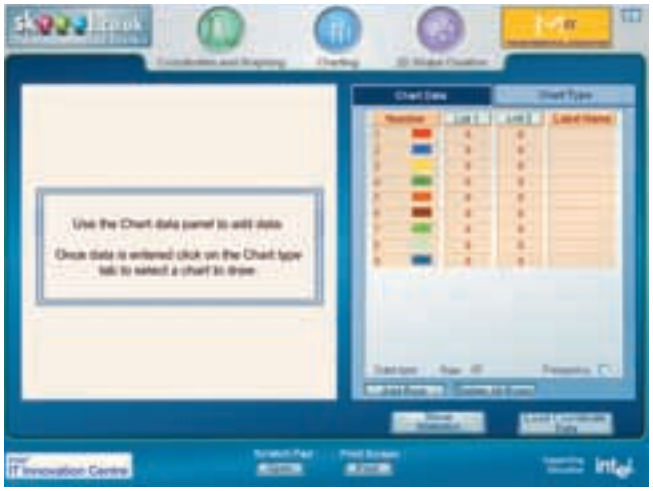
QCA offers more information on higher-order thinking skills (HOTS) for maths together with suggestions for activities.

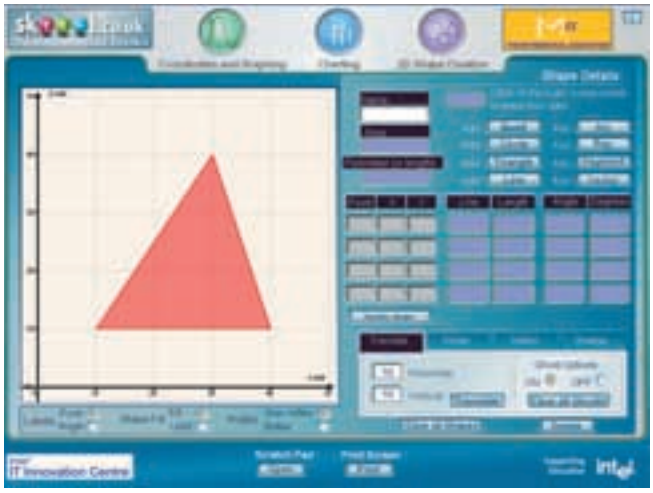
Also, as set out in the judging criteria for the BETT Awards, there should be opportunities for learners to engage with the conceptual ideas being taught without necessarily having to be at the keyboard. The methodologies should not overpower the stated academic learning objectives.

EXAMPLES

Example 9.1: Sibelius Compass
BETT Award Winner 2005: Secondary software, content and tools
The *Sibelius Tracker*, which forms part of this package, enables pupils to create their own compositions, supported by the learning and reviews that they have already completed in the first part of the program. This clearly encourages the progression of pupils' higher-order thinking skills. It offers a large variety of composing options to stretch to the limit the imagination of the pupils.

Example 9.2: The Mathematical Toolkit – Intel IT Innovation Centre
BETT Award Winner 2006: Maths Key Stages 3 and 4





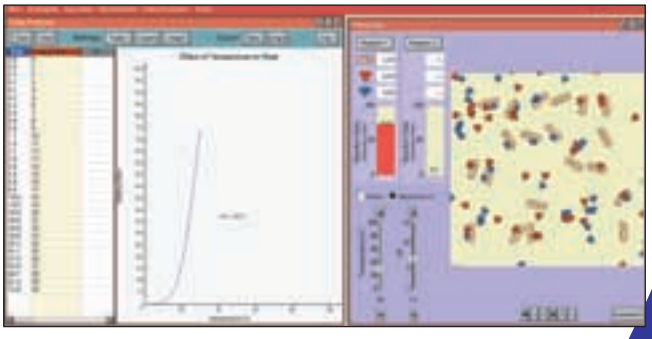
This program enables the teacher to enter into a dialogue with the pupils and follow a 'what if...' scenario. It encourages exploration and investigation, and the judges commented: 'This product allowed challenges to be set at a variety of levels,' adding: 'Suggestions from pupils were welcomed and [were] easily accommodated within the program to see cause and effect.'

Example 9.3: Stagework – National Theatre
[http://www.stagework.org.uk]
BETT Award Winner 2006: English Key Stages 3 and 4
The provision of the political background to certain plays, and the selection of themes such as 'persuasive argument' provided by the resources in *Stagework*, facilitate work on themes through a variety of resources.

Example 9.4: Sunflower Biology Suite
BETT Award Winner 2005: Science Key Stages 3 and 4
The *Sunflower Biology Suite* uses interactive animation and simulation with lots of 'what if...' possibilities to encourage curiosity. The electronic worksheets (see below) are presented alongside photographic and animated images. Pupils can experiment by changing variables, observing the effect on biological processes and recording their observations on screen.

The judges described the product as 'a set of well-focused materials that are rarely superficial'.

The data analyser in the same software offers opportunities for extension activities such as studying the effect of changing two variables at once and then allowing pupils to present data as tables, bar charts or graphs.



'The data analysis is very, very cleverly done,' one judge commented.

QUALITY CHECKPOINT 10

Does your product meet high accessibility and technical standards?

PROMPT QUESTIONS FOR DEVELOPERS

Will your product...

- conform to current accessibility standards based on the Special Educational Needs and Disability Act 2001 and the Disability Discrimination Act 1995?
- include comprehensive supporting documentation for installation, use and maintenance?
- follow established and developing good practice in interface design?
- demonstrate appropriate interoperability?
- offer demonstrable reliability and resilience in use?

Accessibility and technical reliability can make or break a product, so a fundamental point for many developers needs to be its robustness. The application of accessibility standards ensures that learners with physical or sensory impairments can take part in educational experiences in ways that promote self-esteem as well as learning. Teachers will be looking for the opportunities offered by a resource for providing greater inclusivity for special groups of learners.

On the Becta's industry and developers website and the JISC Techdis website you will find some articles giving detailed information on how to make your website accessible. Ensuring that websites and e-learning resources are accessible and technically sound also makes them more likely to be eligible for inclusion in the new content search service currently under development by Becta.

Watchfire is probably best known for testing website accessibility, but the site also has tips on general accessibility issues.

Products must be reliable and usable and, in addition, must offer learners the means of accessing and operating them on a range of different platforms, so interoperability across platforms will be the ultimate goal. There is also a need for strong technical and user support through manuals and online assistance.

APPENDIX

BETT AWARDS

The BETT Awards are an important way of identifying and recognising high-quality ICT products and services or 'exemplars' that will benefit both educational practitioners and developers. Becta, BESA, EMAP and EC&T work as partners in the BETT Awards. The process represents a valuable partnership between the private and public sectors, and is one means of supporting the development of ICT products and services to reflect the needs of the educational system.

EXEMPLAR PRODUCTS LISTED IN ALPHABETICAL ORDER BY CATEGORY FOR 2005

English Key Stages 1 and 2

- Easiteach Literacy – RM
- KnowledgeBox – Pearson Education
- Pelican Interactive Big Book CD-ROMs – Pearson Education

English Key Stages 3 and 4

- Developing Tray – The IT Learning Exchange
- Interactive Poetry: The English Anthology – Heinemann Educational Secondary
- Kar2ouche: Twelfth Night – Immersive Education Ltd
- Whiteboard Workout – Nelson Thornes Ltd

Maths Key Stages 1 and 2

- Can Do Problem-solving – Nelson Thornes Ltd
- Easiteach Maths – RM
- KnowledgeBox – Pearson Education
- SpaceStation Alert – Sherston

Maths Key Stages 3 and 4

- EXP Maths 7 Whiteboard CD-ROM – Nelson Thornes Ltd
- Learn Premium CD-ROMs: Maths for Years 7, 8 and 9 – Hodder Murray
- Mathmania (Key Stage 3) – Topologika Software Ltd
- MathsAlive – RM
- Maths Connect Interactive Presentations 1 – Heinemann Educational Secondary
- Power Maths – Nelson Thornes Ltd

Science Key Stages 1 and 2

- Easiteach Science – RM
- Science Clips – BBC Schools Online

Science Key Stages 3 and 4

- Absorb Chemistry for GCSE – Crocodile Clips
- Absorb Physics for GCSE – Crocodile Clips
- LogIT eXperiment! – DCP Microdevelopments Ltd
- Sunflower Multimedia for Science: Biology Suite – Sunflower Learning
- The Earth and Beyond: Professional Edition – Birchfield Interactive Plc

Early years and primary software, content and tools

- 2Animate – 2Simple
- ACTIVPrimary Solution: ACTIV Primary – Promethean/Portfolio Communications
- Choose and Tell: Nursery Rhymes – Inclusive Technology Ltd
- CoCo 2 – Matrix Multimedia Ltd
- Focus on Mechanical Toys – Focus Educational Software Ltd
- Kidspiration 2 – TAG Learning
- KnowledgeBox – Pearson Education
- My Modelling Toolkit – Semerc
- Pelican Interactive – Pearson Education
- Prime Maths – Young Digital Poland
- Revelation Natural Art – Logotron Ltd
- Sound Beginnings – Semerc
- Success for All – Hawkshead
- Textease Studio Plus – Softease Ltd
- Tizzy's First Tools – Softease Ltd and Sherston

Secondary software, content and tools

- Contribute 3 – Macromedia
- Deep Freeze – Faronics/ITS Ltd
- French: Myself, family and friends 1 – Birchfield Interactive Plc
- Kar2ouche Composer – Immersive Education Ltd
- Learn Premium CD-ROMs: Maths Years 7–9, Science Years 7–9 – Hodder Murray
- LogIT eXperiment! – DCP Microdevelopments Ltd
- Open Mind – Matchware Ltd
- Revelation Natural Art – Logotron Ltd
- Sibelius Compass – Sibelius Software Ltd
- Sibelius Instruments – Sibelius Software Ltd
- Stagework – Illumina Digital/National Theatre
- Success for All – Hawkshead
- Sunflower Multimedia for Science: Biology Suite – Sunflower Learning
- The Earth and Beyond: Professional Edition – Birchfield Interactive Plc
- Think History Interactive Presentations (1) – Heinemann Educational Secondary
- What-Next? – HTI
- Wordbar 2 – Crick Software

EXEMPLAR PRODUCTS LISTED IN ALPHABETICAL ORDER BY CATEGORY FOR 2006

English Key Stages 1 and 2
- 2Create A Story – 2Simple Software
- Interactive Literacy: Multimedia Reading – Harcourt Education Ltd
- Jack and the Beans Talk – Shoo Fly Publishing
- Longman Digitexts: Feargal Fly Private Eye – Pearson Education
- Navigator Dimensions – Harcourt Education Ltd

English Key Stages 3 and 4
- In Between the Lines: Higher Level English – London Gifted & Talented
- Kar2ouche: Much Ado About Nothing – Immersive Education
- Making movies make sense – Media Education Wales
- Stagework – National Theatre

Maths Key Stages 1 and 2
- Abacus Evolve: Pupil Activity Software – Harcourt Education
- EducationCity.com – EducationCity.com Ltd
- Longman MathsWorks Teaching & Learning CD-ROM 4 – Pearson Education
- Longman MathsWorks Teaching & Learning CD-ROM 5 – Pearson Education
- Longman MathsWorks Teaching & Learning CD-ROM 6 – Pearson Education
- Maths-Whizz Teachers' Resource – Whizz Education

Maths Key Stages 3 and 4
- Autograph 3.10 – Eastmond Publishing Ltd
- eStarters for Mathematics – eStarters Ltd
- The Mathematical Toolkit – Intel IT Innovation Centre IR 5-2-1

Science Key Stages 1 and 2
- Simulation Explorer – Granada Learning

Science Key Stages 3 and 4
- Bioscope – Cambridge-Hitachi
- Chemistry Version 3 Series – Birchfield Interactive Plc
- Graphical Logger Pack – Data Harvest
- Hodder Science Interactive Assessment – Hodder Murray
- Logger Pro 3 – Vernier Software & Technology

Early years and primary software, content and tools
- 2Animate – 2Simple Software
- 2Create – 2Simple Software
- 2Create A Story – 2Simple Software
- Clicker 5 – Crick Software
- I Can Animate – Kudlian Soft
- Kahootz – TAG Learning
- Longman Digitexts: Feargal Fly Private Eye – Pearson Education
- Mini Musical Monsters – Q&D Multimedia Ltd
- Mult-e-Maths Primary Maths Toolbox – Cambridge-Hitachi
- Switch Skills 1 – Inclusive Technology Ltd
- Textease Timeline – Softease

Secondary software, content and tools
- Dartfish TeamPro – Dartfish
- MediaStage – Immersive Education
- Memory-Map Selections (with aerial photography) – EVO Distribution Ltd
- Sibelius 4 – Sibelius Software Ltd

OTHER CATEGORIES FOR BETT AWARDS 2005 AND 2006

- Early years and primary hardware
- Secondary hardware
- Learning and skills hardware, software, content and tools
- Special educational needs (SEN) hardware
- Supporting institutional management

USEFUL LINKS

BETT Awards [http://www.becta.org.uk/bettawards]

BETT Awards criteria for fitness for purpose
[**http://www.becta.org.uk/bettawards**] click on 'Judging criteria'

'Harnessing technology: Transforming learning and children's services' e-strategy
[**http://www.dfes.gov.uk/publications/e-strategy**]

Becta's industry and developers website [**http://www.becta.org.uk/industry**]

Quality principles [**http://partners.becta.org.uk/**] click on 'Quality principles'

UK national curricula [**http://www.becta.org.uk/partners**]

National Curriculum for England [**http://www.nc.uk.net**]

Council for Curriculum Examinations and Assessment in Northern Ireland
[**http://www.ccea.org.uk**]

Learning and Teaching Scotland [**http://www.ltscotland.org.uk**]

Qualifications, Curriculum and Assessment Authority for Wales
[**http://new.wales.gov.uk/topics/educationandskills/?lang=en**]

'A Curriculum for Excellence' (review of the curriculum for Scotland)
[**http://www.acurriculumforexcellencescotland.gov.uk**]

Programmes of study [**http://www.nc.uk.net/nc/contents/posandatt.htm**]

Attainment targets [**http://www.nc.uk.net/nc/contents/posandatt.htm**]

Level descriptors [**http://www.ncaction.org.uk**]

Attainment target for English 1 [**http://www.nc.uk.net/nc/contents/En--1-ATT.html**]
(speaking and listening)

Four general teaching requirements
- Inclusion [**http://www.nc.uk.net/nc_resources/html/inclusion.shtml**]
- Language [**http://www.nc.uk.net/nc_resources/html/language.shtml**]
- ICT [**http://www.nc.uk.net/nc_resources/html/ict.shtml**]
- Health and safety [**http://www.nc.uk.net/nc_resources/html/health.shtml**]

National Literacy Strategy
[**http://www.standards.dfes.gov.uk/primary/publications/literacy/nls-framework**]

National Numeracy Strategy
[**http://www.standards.dfes.gov.uk/primary/publications/mathematics/math_framework**]

Primary National Strategy [**http://www.standards.dfes.gov.uk/primary/about**]

Key Stage 3 National Strategy [**http://www.standards.dfes.gov.uk/keystage3**]

Foundation Stage stepping stones [**http://www.qca.org.uk/223.html**]

Early learning goals – curriculum guidance for the Foundation Stage
[**http://www.surestart.gov.uk/publications/**]

Non-statutory schemes of work for teachers
[**http://www.standards.dfes.gov.uk/schemes3**]

National Curriculum in Action [**http://www.ncaction.org.uk**]

Government guidance on promoting creativity in the classroom
[**http://www.ncaction.org.uk/creativity**]

QCA on promoting creativity at Key Stages 1, 2 and 3
[**http://www.ncaction.org.uk/creativity/about.htm**]

Developing an inclusive curriculum
[**http://www.nc.uk.net/inclusion.html**]

Inclusion supporting individual learning needs
[**http://inclusion.ngfl.gov.uk**]

Pupils with disabilities and special educational needs
[**http://www.nc.uk.net/ld**] p12

Pupils who are gifted and talented [**http://www.nc.uk.net/gt**]

Pupils who are disaffected, excluded or from disadvantaged communities [**http://www.socialexclusion.gov.uk**]

QCA's 'Respect for all: valuing diversity and challenging racism through the curriculum' [**http://www.qca.org.uk/301.html**]

'Celebrating cultural diversity' Netdays report
[**http://www.becta.org.uk/publications**]

Personalised learning website
[**http://www.standards.dfes.gov.uk/personalisedlearning**]

Becta website on special educational needs
[**http://www.becta.org.uk/schools/inclusion**] click on different examples, 'Implementing the whole curriculum' and 'Enabling access to the curriculum'

Software for schools seminar
[**http://www.becta.org.uk/schools/inclusion**] click on 'Software for schools seminar'

BETT Awards quality criteria on supporting inclusive practice
[**http://www.becta.org.uk/bettawards**] and click on 'Judging criteria', then
'Digital content - Primary (Core subjects)' OR
'Digital content - Secondary (Core subjects)' OR
'Digital content - Primary (Other)' OR
'Digital content - Secondary (Other)' then
click on 'Supports and promotes inclusive practice'.

Special Educational Needs and Disability Act (SENDA)
[**http://www.opsi.gov.uk/acts/acts2001/20010010.htm**]

Pupils with disabilities and the built and learning environment
[**http://www.teachernet.gov.uk/wholeschool/sen/schools/accessibility**] p13

English as an additional language (EAL)
[**http://www.qca.org.uk/10013.html**]

The motivational effect of ICT on pupils
[**http://www.dfes.gov.uk/research/programmeofresearch/projectinformation.cfm?projectId=13757&type=5&resultspage=1**]

Becta research in ICT and motivation
[**www.becta.org.uk/partners/research**] click on 'Reports and publications', scan down to 'All publications', click on 'Research bibliographies'. Article is 'ICT and Motivation'

Futurelab 2005 handbook on games and learning
[**http://www.nestafuturelab.org/research/handbooks.htm**]

Design and technology at Key Stage 3 teacher's guide
[**http://www.standards.dfes.gov.uk/schemes2/secondary_dt/teachers_guide/sectiontwo/links/thinking**] p23

Government's strategy on thinking skills in the primary classroom [**http://www.standards.dfes.gov.uk/thinkingskills**]

Higher-order thinking skills (HOTS) for maths
[**http://www.qca.org.uk/12568.html**]

Becta's industry and developers website
[**http://becta.org.uk/industry**]

JISC Techdis [**http://www.techdis.ac.uk**] advice on accessibility and inclusion p25

Content search service
[**http://www.becta.org.uk/schools/contentsearch**]

Watchfire [**http://webxact.watchfire.com**] on accessibility, quality and privacy issues

Special Educational Needs and Disability Act 2001
[**http://www.hmso.gov.uk/acts/acts2001/20010010.htm**]

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[**http://www.opsi.gov.uk/acts/acts1995/1995050.htm**]

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