



Using technology to support curriculum development



Qualifications
and Curriculum
Development
Agency



National
Curriculum

53-55 Butts Road, Earlsdon Park,
Coventry CV1 3BH

Telephone: 0300 303 3010
Textphone: 0300 303 3012
Email: info@qcda.gov.uk
Website: www.qcda.gov.uk

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How to use this publication

This publication provides an overview. You can dig deeper using the [online interactive resource](http://www.qcda.gov.uk/curriculum), which contains filmed case studies and a planning tool at www.qcda.gov.uk/curriculum. These materials are designed to help curriculum leaders consider how using technology can extend and enhance the curriculum to enable learners to become **successful learners, confident individuals and responsible citizens**.

This guide takes you through a process of curriculum innovation, from planning to evaluation, and considers:

- › how technology can extend when and where learning can take place
- › how technology can affect how learning takes place
- › how technology can involve a broader range of individuals in the learning process.

Technology has transformed our day-to-day lives, the way we work and study, and how we spend our leisure time. It has an important part to play in the design and development of the curriculum and has the potential to give learners an **enjoyable, engaging, challenging and motivating** experience of learning, raising achievement and improving learning outcomes.

Technology should not just replicate what we do already; it should offer new ways of working and offer learners new ways of interacting with information and gaining knowledge, understanding and skills.

Technology has the greatest impact on curriculum development when schools and colleges:

- › have strong and supportive leadership, with clearly articulated priorities and goals
- › start with the learning first, planning carefully to achieve a shared curriculum vision and ensuring continuity across years and key stages
- › involve teachers at all levels in the change, providing development opportunities and giving teachers the opportunity to experiment and develop their expertise, and enhance their own methods of teaching with technology
- › involve learners in deciding how technology can best support their learning

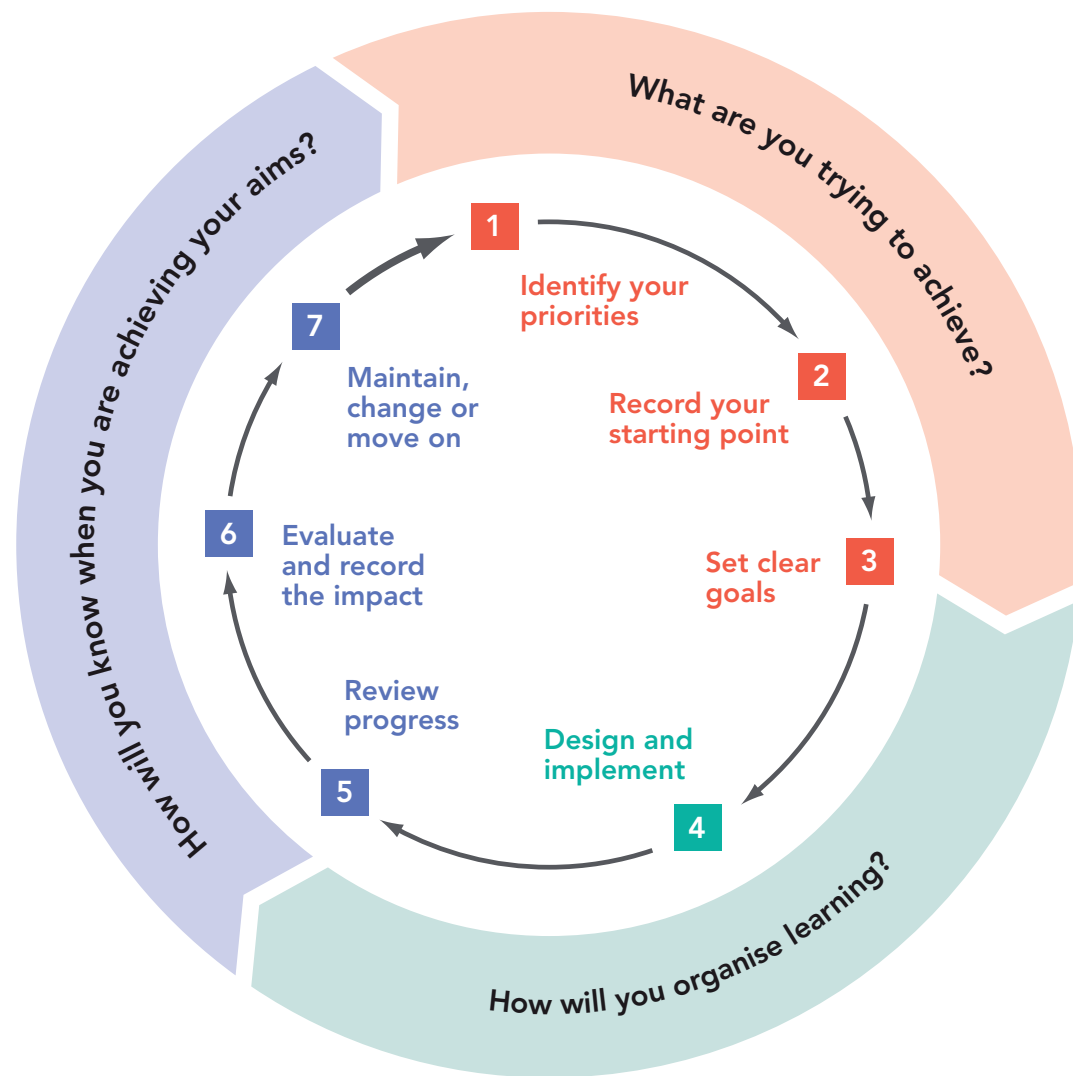
- › have a well-managed and robust technical infrastructure for using technology to enhance, enrich and extend the curriculum.



Planning how to use technology to enhance and extend your curriculum



Establishing a process in advance will ensure as great an impact as possible. This innovation cycle will help you plan your approach.



What are you trying to achieve?

Establish your vision for the curriculum

- **Identify your priorities:** What do you need to focus on to ensure technology enriches and enhances the curriculum, building learners' engagement, motivation and aspirations?
- **Record your starting point:** How does technology currently support the curriculum in your school? How well are learners equipped with ICT capability?
- **Set clear goals:** Compared to your starting point, what do you want to see in terms of how your curriculum is extended and enhanced by technology and by what review date?

How will you know when you are achieving your aims?

Demonstrate how you have achieved your aims or what you need to improve

- **Review progress:** What data and evidence will you collect to demonstrate progress in developing your curriculum?
- **Evaluate and record impact:** What has been the impact of each of your goals? Do you have clear evidence of the impact on learners of using technology in the curriculum?
- **Maintain, change or move on:** Will you continue what you are doing, change your approach, or move on to another set of priorities for improving your curriculum?

How will you organise learning?

Design and implement your curriculum enriched with technology

- **What is being taught and learned:** How will technology impact on the content of the curriculum and the knowledge learners attain?
- **When and where teaching and learning take place:** How will time and space be used to make the most of advantages of using technology to support the curriculum?
- **How and with whom teaching and learning take place:** How will technology be used to motivate every learner and make the most of teaching expertise?

Explore the curriculum innovation cycle for the new primary curriculum or for the secondary curriculum on the national curriculum website at www.qcda.gov.uk/curriculum.

What are you trying to achieve?

Using technology to enhance and extend your curriculum

When and where

teaching and learning take place

The when and where of learning throughout the day, both in and out of school or college, can have a powerful impact on learners. Technology can make it possible for learning to take place anytime and anywhere.

How and with whom

teaching and learning take place

Technology makes it possible to access new resources, to engage with many diverse people and establish new roles and relationships.

Consider:

Where are you now? Where do you want to be?

How can you use technology to support your vision for the curriculum?



Look at the photographs. Are you using technology in these ways? What are the different ways you currently use technology to support learning and raise standards?

How will you organise learning?

When and where teaching and learning take place



The curriculum sets out what all learners are entitled to learn, but they don't all need to experience it at the same rhythm or in the same locations. Technology makes it possible to be more flexible about when and where teaching and learning take place, and makes it easier for the curriculum to build on learners' interests and abilities.

How can technology impact on when and where teaching and learning take place?

- **Be flexible with location and duration**
Use technology to vary the pace and space used to make learning more engaging and meet the needs of individuals. Conduct virtual visits to other places using interactive internet resources.
- **Social networks**
Support the use of social networks technology to allow learners to collaborate safely and responsibly in the creation and management of their own learning.
- **Build on learners' aspirations**
Promote learning that is based on learners' own interests and experiences from outside school or college.
- **Make learning more mobile**
Make use of mobile technologies such as mobile phones, GPS, data loggers and handheld computers for learners to capture information when learning outside the classroom to use later back in the classroom.

- **Enable access anytime-anywhere**
Encourage learners to use the web to access resources that are not restricted by place or time to provide flexibility in when and where learning takes place.

- **Connect to learners' homes**
Enable access to your school's learning materials at any time using learning platforms and virtual learning environments, as these provide a safe online space.

Promote their use to support greater learning opportunities and family involvement, especially with parents and carers.

- **Facilitate 1:1 support**
Use online messenger services or email to encourage 1:1 support and mentoring for staff and learners.



A school where 'you choose'

The motto is 'students first' at **Priory Community School**, a specialist technology school for 11- to 16-year-olds in Weston-super-Mare, where technology is being used to challenge always having the teacher at the front and desk-based learning. Learners themselves are being encouraged to help the transition, using familiar technologies such as mobile phones, social networks and video to unlock new opportunities for learning. Priory's vice principal believes that choice and flexibility are important in integrating technology across the curriculum, with learners having the ability to tackle tasks using all available tools and resources to develop critical thinking and transferable skills.

Technology is used at the school in many ways to develop student voice. The school uses YouTube to engage local parents and the community and improve home-school links. Learners also create their own video-based revision aids and upload them to YouTube, where they are viewed hundreds of times during examination periods.

As an institutional participant in the Molenet programme, Priory has explored mobile learning for courses such as BTEC engineering, and uses the free, open-source learning platform Moodle to allow learners to access resources from school or home to support independent learning. The 'students first' approach has had a significant impact on the learners at Priory by offering them a more personalised curriculum that meets their interests and needs, providing flexibility and choice about when, where and how they learn.

Reflect, discuss, respond

- When and where does learning take place in your school or college? How do you use technology to make the greatest impact on learning for all your learners?
- What technologies do learners use outside school or college? How does the curriculum reflect this and harness their experiences and skills?
- If all your learners could access the internet from home what could you do that you couldn't do before? What are the implications for teaching and how learning is organised?
- What opportunities does technology offer? What are the constraints and how can you overcome them?

Learning is personal

Parkside Pupil Referral Unit in Ipswich provides an alternative learning environment to key stage 4 learners with physical, emotional and other challenges. Its strong school culture is centred on meeting the social and emotional needs of learners by using technology and the arts to increase engagement and provide personalised, flexible provision that best meets the needs of each learn.

Staff and learners regularly meet for pupil-centred reviews where learners articulate how they learn best and what motivates them. This information is used to co-construct the best learning environment possible, which directly impacts on how and when students engage in learning.

Using its virtual learning environment, the school allows learners to access learning at times that suit them – anywhere, any time. Protocols are in place to allow learners to leave lessons and work independently in the lounge and internet cafe area.

The school sees its role as supporting learning 24/7, which means learning can and should take place outside the 9–3 school day, integrating with young people's lives outside school.

A range of creative solutions to meet learners' specific needs has been developed, including making iPods and



laptops accessible to learners who need 'time out', and an animation lab for creative production.

Increasingly, senior staff report teachers feeling more comfortable with learners providing their own input and guidance, and the pupil-centred review system is now providing evidence of increased engagement, as well as improvement and progress in the quality of students' learning. Enrolment, attendance and time in class have also improved.

Find out more on the interactive resource at www.qcda.gov.uk/curriculum

Becta Home Access Programme

Becta leading next generation learning

Home Access is the government programme which will help to ensure that more children in state-maintained education in England have access to technology at home to support learning.

Evidence shows that home access can engage and motivate learners and support parental engagement. More recent evidence has suggested that learners who use a computer at home for schoolwork are more likely to gain over five GCSEs and one A-level, and improve the grades attained. Find more information about this evidence at www.becta.org.uk.

The programme aims to benefit more than 270,000 households by March 2011.

Low-income families who meet set eligibility criteria can apply to a central body for a Home Access Grant to purchase a compliant computer and internet package from a range of approved suppliers.

Schools can play a vital role in helping their pupils and parents benefit from home access.

Find out more about the Becta Home Access Programme at www.becta.org.uk/homeaccess.



How will you organise learning?

How and with whom teaching and learning take place



The curriculum can be enhanced by involving other individuals and groups in the learning process. All learners can benefit from different types of teaching and different sorts of interactions, and from engaging with role models and experts such as scientists, sportspeople and writers.

How can technology impact on how and with whom teaching and learning take place?

➤ Involve parents and carers

Involve parents and carers in children's learning at home and keep them up to date with what and how their children are learning in school.

Ask parents and carers with experience of using technology for commercial, social and civic purposes to visit school as specialist tutors.

➤ Involve learners as co-creators

Involve learners alongside staff in planning for technology use across the curriculum. Focus on learners' own specific needs, interests, levels of aptitude with technology, and work with them to identify the best learning objectives for them.

➤ Make cross-curricular and thematic connections

Use your learning platform to establish cross-curricular resource banks and

promote greater exploration of themes for learning, for example by focusing on curricular dimensions such as global dimension and sustainable development or enterprise.

➤ Supporting assessment

Use e-portfolios to allow learners to collect their own evidence and review their own and their peers' learning.

Capture a broad range of evidence for learners' e-portfolios of their achievements, for example from parents, carers, peers and members of the wider community.

➤ Make learning (inter)active

Make use of interactive simulation applications for learners to experiment with ideas, phenomena or activities that cannot be experienced in the physical classroom.

➤ A global audience

Through technology use the 'global village' as an authentic audience or as collaborators. Learn from other cultures and societies through video conferencing and social networks. Allow learners as creators of content to present to a wider and authentic audience, whether it is in your local community or on the other side of the globe.

➤ Make the most of external experts and role models from outside school

To support face-to-face interactions use video conferencing, online video, on-demand television or blogs to get virtual access to experts and role models in the classroom, including scientists, sportspeople, writers, historians,

politicians, and local entrepreneurs and community leaders.

➤ Promote learner-created learning content and resources

Support learners and teachers to create a dynamic, growing repository of learning content, from work with audio tools, FlipCams, animation and photography software and resources that can be shared via your learning platform or network, then re-used, modified or extended by others.

➤ Connect the curriculum with learners' lives

Use a learning platform to make connections with other sites of learning such as sports clubs, youth centres and community settings. Celebrate learning across your wider community, using technology to communicate it.

➤ Promote collaboration, team work and community-building

Encourage staff and learners to use collaborative and social tools such as wikis (editable websites) to store and share content, add comments to each other's work, and foster effective team-working skills and a sharing ethos for learning.

➤ Use learners' technical expertise

Listen to what learners have to say about technology, how they use it in their day-to-day lives, and how they see it helping their learning. Put together a technology steering group comprising learners, teachers and ICT professionals to explore new technological opportunities and ideas.





Find out more on the interactive resource at www.qcda.gov.uk/curriculum

The R&D school

'Community, learning and creativity in harmony' is the motto of **Hawes Side Primary School** in Blackpool. With its own Research and Development department, a pupil Web 2.0 team responsible for researching applications and software to enrich learning, Hawes Side aims to make informed decisions about how technology can extend and enhance the curriculum and offer compelling and creative learning experiences. It aims to equip learners for the future by maximising the use of technology to develop independence and to encourage and develop local and global communication. Hawes Side is proud of its links with other schools in the community and worldwide, with learners frequently video conferencing with other schools to collaborate, share work and develop their speaking and listening skills.

The school has its own digital curriculum, which supports learners to become confident in using digital tools and applying technology across the curriculum. Many teachers now view learning as a partnership, with learners taking increased ownership. Learners are notified in advance about new topics so that they can carry out some independent online research and contribute to the shared Hawes Side blog; "Run for kids, by kids." Parents and other family members are encouraged to get involved. Teachers use this learner led research as a starting point for their teaching, tailoring lessons and activities to learners' needs and interests.

The senior team bases all its technology decision-making on a clear strategic vision, with learners trialling and evaluating technologies before large-scale purchases are made. This approach is having real success at Hawes Side: teachers are encouraged by the increasing independence, confidence and resilience shown by the children as they use technology to support their learning.

Sharing and Celebrating Achievement

Three Ways School in Bath provides a stimulating, creative learning environment for pupils with special needs. Staff have worked hard to create a shared vision for their new school and as a result the school now provides a technology-rich environment with technology at the core of the curriculum. The teachers attribute their success to a focus on learning and hold weekly sessions for staff to come together for 15 minutes and take turns to share practice including successes, reflections, difficulties and ideas or to showcase new technologies in a learning context. This has enabled them to improve the quality of learning and the engagement and achievement of the learners.

One particular aspect of their work focuses on the use of video cameras such as FlipCams as well as audio recorders to capture pupils' work in alternative ways both to support assessment and to share and celebrate students' progress with parents in a meaningful way. Simple analogue technologies, for example switches and lights, have helped to develop students' independence (particularly students with severe physical impairments and restricted movement) by allowing them to make choices and experience cause and effect.

Find out more on the interactive resource at www.qcda.gov.uk/curriculum

School.net

'The students told us they wanted to use technology to help them learn better and who are we to deny them that?'

A large-scale student survey conducted at **Saltash Community School** in Cornwall demonstrated to staff that they need to develop the active participation of learners in using technology across the curriculum to better meet their needs and help them progress. At Saltash.net ICT is not seen as a new tool for learning, it is seen as facilitating a whole new way of learning. This vision is enshrined in all the school's activities, and the school's name has changed to Saltash.net to reflect its view of the crucial role technology plays in a 21st Century curriculum. Far from this being a top-down process, staff are encouraged to pilot a broad range of technology with their learners and to share positive outcomes for teaching and learning with other colleagues.

The use of social networking technologies to establish private social networks for classes has allowed learners to discuss topics on chat forums, add to shared blogs, upload multimedia content and receive feedback from both teachers and peers. The teachers also have their own private social network for sharing practice and finding out about new learning resources.

The assistant headteacher reports that since technology has been introduced ubiquitously across the school, students have much greater ownership of their learning, leading to greater independence and progress in learning. Peer learning has developed significantly and student-teacher relationships have been improved through a more collaborative approach within the classroom.

Reflect, discuss, respond

- How can you use technology to involve a broader range of individuals, including professionals, parents and carers and other learners? How will this make more compelling learning experiences?
- How will technology change your role and that of learners? What are the implications for your practice?
- What opportunities does technology offer? What are the constraints and how can you overcome them?

How will you organise learning?

What is being taught and learned?

Technology is a cause of change in the curriculum – impacting on how we access and gain knowledge – and a provider of the tools and resources required to make the changes that can inspire learners to succeed.

How can technology support thinking and learning?

Independent enquirers use technology to:

- plan and carry out their own research and explore their own ideas to develop solutions to issues or problems
- analyse and critically evaluate information, judging its relevance, purpose, accuracy, plausibility, value and possible bias.

Effective participators use technology to:

- participate in online communities and forums
- make their own informed contributions to local, national and international issues using ICT for information exchange and access, for example participating in e-debates
- contribute to knowledge-building sites such as wikis.

Creative thinkers use technology to:

- develop their own ideas, explore possibilities, seek innovative alternatives and make new connections, for example using ICT to model scenarios and identify patterns
- design their own solutions, adapting and modifying their ideas, for example refining

information creatively to combine text, sound and image

- take increasing personal responsibility for developing how they think and work.

Team workers use technology to:

- communicate, collaborate and share ideas on a local, national and global scale
- provide and respond to constructive feedback, taking account of different views and developing the confidence to resolve issues and achieve their identified goals.

Reflective learners use technology to:

- reflect critically on available information, for example to take account of its purpose, author, currency and context
- continuously monitor their own progress, identifying criteria for success and making changes to further their learning.

Self-managers use technology to:

- take personal responsibility for organising their own time and resources, prioritising actions and managing risks to carry out and successfully complete a task, for example using ICT effectively to organise their time and resources
- make choices about how ICT can support them in their learning and in their life outside school.

See how [Ninlands Primary School](#) support their learners in developing some of these skills in their case study overleaf.



Technology should also be integrated into subject teaching ensuring that young people are able to apply technology responsibly and effectively to support their learning. The subject sections of the national curriculum website provide a useful starting point to investigate this further.

Explore: personal, learning and thinking skills for key stage 3 and 4 and, the new primary curriculum Essentials for learning and life at the national curriculum website www.qcda.gov.uk/curriculum.





Developing an inter-active curriculum

Ninelands Primary School in Leeds has a **Learning in Action curriculum**: the school emphasises learning by doing and an interactive approach to learning across the curriculum. Technology is used as a tool to enhance the children's learning, to make it more accessible, colourful and exciting, and to give children a wider range of experiences and skills. The school aims to enable children to become confident and competent in their use of ICT and to be wiser and smarter at using the internet.

Technology is used to encourage both independent and cooperative learning and the school prides itself that all staff have the ability and vision to integrate technology into the curriculum.

Multimedia activities are used in all lessons to invigorate and add meaning to the curriculum and to make children's education as interesting and engaging as possible. Recent lessons at key stage 1 have involved children using photo software to create content and communicate the results of their learning as part of a unit about recipes from around the world. They took photos of themselves making food then added instructional text and appropriate music to create a photo story.

Key stage 2 learners have used animation and visual design software to create visual designs based on measurements of spaces around the school site. Learners have also used video and audio recording and editing software to create podcasts, including their own weather forecasts and recordings of class debates. Learners' work is often displayed on screens located around the playground and around the school.

The school has been successful in ensuring that technology is used effectively across the curriculum by all learners. Even the very youngest children at Ninelands now demonstrate creative, confident and independent use of technology to improve learning.



Find out more on the interactive resource at www.qcda.gov.uk/curriculum

A 21st Century Learning Village

Cramlington Learning Village is an 11–18 school in the northeast of England made up of three interconnected 'learning villages' housing 2,300 pupils. Cramlington seeks, through its learner-led, enquiry-based curriculum, to create 21st Century learners who make use of 21st Century technology to become increasingly independent in their learning and thinking.

Rebuilding the school through the Building Schools for the Future Programme has allowed Cramlington to put technology into the hands of the learners. Learning spaces both virtual and real have been carefully planned and designed around the enquiry-based curriculum, with most classrooms providing a variety of technological tools. The Junior Learning Village also houses a Knowledge Café, which provides an informal learning space where students can eat and have access to technology. Cramlington is developing its virtual learning environment to provide a personalised 24/7 learning environment for students. It includes an integrated online portfolio assessment system that encourages self-assessment and allows learners to create and manage their own learning portfolios.

Cramlington is committed to enabling students to use technology to research and resource, create, experiment and explore, transform and translate, communicate and collaborate, and review and reflect. All year 8 pupils take a module on information fluency that covers critical thinking skills and critical digital literacy. This encourages them to reflect critically on their use of technology and not just learn technical skills in isolation. Cramlington's **Learning to Learn programme** underpinned by the responsible, critical and effective use of technology, has had a significant impact on teaching and learning. Students take a much more confident and critical approach to using technology to support their learning, and teachers are increasingly becoming facilitators of learning.

Reflect, discuss, respond

- How can the use of technology encourage deeper learning and ensure that young people realise the potential of new technologies to become:
 - successful learners
 - confident individuals
 - responsible citizens?
- How will you prepare all staff and learners to use technology safely and responsibly?
- What opportunities does technology offer? What are the constraints and how can you overcome them?

How will you know when you have achieved your aims?

Review, evaluate and re-prioritise



Developing the curriculum is a complex process. Building in key points for reflection, collecting evidence of impact and setting priorities will be essential to ensure constant cycles of review and improvement. Evaluation is an integral part of any innovation to determine whether you have been successful in achieving your aims.

Review progress

What data and evidence will you collect to demonstrate your progress?

- What teacher assessments of learner progress and staff consultations can you collect and analyse?
- Could you organise learner satisfaction surveys and evaluations?
- Could you gather views from parents and carers and the local community?
- What additional data can you gather from your self-review framework and ICT action plan?
- How does evidence inform your school improvement plan?

Evaluate and record impact

What has been the impact on each of your goals? Do you have clear evidence that using technology to support the curriculum has benefited on learners?

- How are things different from the baseline?
- What changes can you see in learners?
- What stories of change and success can you tell and how can you share them?
- What remains weak or inconsistent and how can you rectify it?

Maintain, change or move on

Will you continue what you are doing, change your approach, or move on to another set of priorities?

- Do you need to continue addressing the same goals, or have you fully achieved them?
- Do you need to modify the way you approach your goals?
- Should you devise new priorities and goals to take the next step in achieving the overall curriculum vision?

Next steps

Bringing learning to life using technology

With this evaluation process in mind you can now dig deeper using the online interactive resource to:

- view filmed case studies to inspire and inform
- use the planning tool to capture how you can extend and enhance your curriculum using technology
- reflect on how you will know when you have achieved your aims.



Further support

National Curriculum



Guidance and support is available to download from www.qcda.gov.uk/curriculum, including

- the programmes of study and level descriptions
- tools for curriculum development and design
- examples of the curriculum in action in schools and colleges across the country.

During the year we will be adding new tools and case studies to support you in developing your curriculum.

Disciplined curriculum innovation: making a difference to learners – a seven-step process to help schools transform their curriculum so that it makes a positive impact on students' lives, achievements and prospects.

Bringing greater coherence – a guide to help you take a fresh look at your curriculum and make it even better for your learners.

All these publications can be downloaded from the national curriculum website at www.qcda.gov.uk/curriculum.

To order copies, go to www.qcda.gov.uk/orderline or phone the QCDA orderline on 0300 303 3015.



Becta

Becta's role is to ensure that technology is used at its best in the British education system. It works to make sure technology is used effectively, maximising the gains to teachers and learners, and that technology is used efficiently to achieve the greatest benefits for the least cost – and save money for the system.

www.becta.org.uk
www.becta.org.uk/homeaccess

e-safety links

Technology is empowering, but has its risks too. Schools, colleges, children's services, parents and carers all play a role in helping children and young people to stay safe online. Visit the Next Generation Learning Website to get further advice and information relating to safeguarding learners and helping them to develop the skills and knowledge to stay safe online.

www.nextgenerationlearning.org.uk/safeguarding

ICT Register for Schools

The ICT Register is a unique resource of innovative practice about all aspects of learning with technology and it is freely available for schools around the world. It is operated by the Specialist Schools and Academies Trust in partnership with Becta.

www.ict-register.net

