



**INFORMATION AND
COMMUNICATION
TECHNOLOGY**
in the
National Curriculum
in Wales

Key Stages 2–3

Title of document

Information and Communication Technology in the National Curriculum in Wales

Audience

Headteachers and governing bodies of maintained schools in Wales; local education authorities; teacher unions and school representative bodies; church diocesan authorities; national bodies in Wales with an interest in education.

Overview

This document sets out the Welsh Assembly Government's proposed changes to information and communication technology in the national curriculum in Wales.

Action required

Responses to this consultation document must be received by 30 March 2007. Responses can be sent to the address shown below, using the freepost envelope provided, or submitted electronically to curriculum@beaufortresearch.co.uk. Alternatively, online questionnaires are available at www.wales.gov.uk/consultations

Further information

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Additional copies

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Or by visiting the Welsh Assembly Government's website www.wales.gov.uk/consultations

Address for return of comments

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This document contains the proposals for information and communication technology in the national curriculum in Wales. These are for consultation. The consultation lasts until 30 March 2007. It would be helpful if you would submit your views on the response questionnaire provided with the consultation pack or respond via the website at www.wales.gov.uk/consultations

Wales Curriculum 2008: The objectives

The Welsh Assembly Government intends that, from 2008, there exists in Wales:

- a single coherent framework for curriculum, assessment and qualifications 3–19 which will help schools to raise standards of achievement and widen educational opportunity
- a set of revised subject Orders which are manageable and reflect whole curriculum characteristics and those of each key stage.

The agenda for the development of this revised curriculum and assessment framework for Wales is based on the Minister's acceptance of the key recommendations in ACCAC's *Review of the school curriculum and assessment arrangements 5–16: A Report to the Welsh Assembly Government April 2004*. That report described the context for the review and the evidence that was gathered to inform ACCAC's advice.

Advisory groups for cross-phase (primary and secondary) and additional educational needs worked alongside the personal and social education and subject advisory groups to help revise the curriculum.

In revising the subject Orders, opportunities have been taken to:

- revise the Common Requirements section to clarify each subject's contribution to developing skills across the curriculum and to the Curriculum Cymreig and personal and social education
- review the use of the icons for skills and other requirements to give a fuller picture of opportunities for skills development and application
- revise the 'Access for all pupils' text to clarify breadth and depth of study, and to ensure inclusion and accessibility for all pupils, especially those with additional educational needs
- revise and rename focus statements to reflect the focus on skills development and application and to provide an overview of what is involved in each key stage for each subject

- develop a common structure – Skills and Range - initially identifying the required skills for each subject and then the range of contexts, opportunities and activities through which these skills should be developed
- use the non-statutory skills framework to underpin the review of the subject Orders, adding text consistent with that used in the skills framework to indicate where opportunities and contexts exist to develop skills across the curriculum
- update and reduce content where necessary to ensure relevance to the twenty-first century, taking account of learners' personal development and well-being, their preparedness for citizenship, community life and employability within a bilingual Wales, and education for sustainable development and global citizenship
- add non-statutory examples where necessary to clarify key experiences and learning opportunities
- re-draft level descriptions, where necessary, to indicate clearly progression in skills relevant to each subject, and to recognise the progress of pupils who are working below Level 1
- remove references to the Key Stage 2 and 3 programmes of study from the level descriptions
- reduce the level of prescription in the Key Stage 4 Programme of Study to allow qualifications that provide different and more inclusive pathways through each subject, giving learners greater opportunities for choice and participation.

The main changes to the current (2000) Order are:

- The title has been changed from Information Technology (IT) to Information and Communications Technology (ICT).
- More detail has been added under Range about types of activity and contexts for learning.
- Greater emphasis has been placed on using ICT to generate new information on which to make decisions.
- Examples have been reviewed and updated to reflect life in the twenty-first century.
- A statement has been added to Range to focus on health, safety and child protection.
- Level descriptions have been revised to clarify progression.



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Responsibilities on schools

Under the requirements of equal opportunities legislation covering race, gender and disability, schools in Wales have a duty towards present and prospective learners to:

- eliminate discrimination and harassment and promote positive attitudes
- promote equal opportunities and encourage participation in all areas of school life.

Every learner should develop a sense of personal and cultural identity that is receptive and respectful towards others. Schools should plan in all subjects to develop the knowledge and understanding, skills, values and attitudes which will enable learners to participate in our multi-ethnic society in Wales. Schools should develop approaches which support the ethnic/cultural identities of all pupils and reflect a range of perspectives, to engage learners and prepare them for life as global citizens.

Schools must work to reduce environmental and social barriers and provide an inclusive curriculum which will offer opportunities for **all** learners to achieve in school in preparation for further learning and life.

Schools will need to plan and work with specialist services to ensure relevant and accessible learning experiences for all. For learners with disabilities in particular, they should make reasonable adjustments in order to:

- improve access to the curriculum
- increase access to education and associated services
- provide information in a range of formats.

Schools should provide access to appropriate equipment and approaches with alternative/adapted activities to ensure the full participation of all learners including those who use a means of communication other than speech.

For learners whose first language is neither English nor Welsh, schools should take specific action to help them learn both spoken and written English and/or Welsh through the curriculum. Schools should ensure that learners are provided with material which is appropriate to their ability and previous education/experience and which extends their language development and challenges them cognitively.

Learner entitlement

Schools in Wales should teach all programmes of study and frameworks in ways appropriate to learners' developing maturities and abilities. Schools should ensure that learners' preferred systems of communication are used to maximise access to the curriculum and should recognise the value of the home language in learning. Learners should experience a variety of styles to extend their learning.

To enable **all** learners to access relevant skills, knowledge and understanding at an appropriate level, schools may use content from earlier or later phases/key stages within the curriculum. Schools should present material in ways suitable for the learners' age, experience, understanding and prior achievement to engage them in the learning process.

For learners working **significantly** below the expected levels at any key stage, schools should design their curriculum to meet the priority needs of their learners. Sufficient flexibility exists within the curriculum to meet the needs of **all** learners without the need for disapplication. Where it is not possible to cover all of the programmes of study for each key stage, the statutory requirement to provide a broad, balanced curriculum can be met by using the full range of subjects as contexts for learning.

For learners working at higher levels, greater challenge should be incorporated by presenting material in ways which extend breadth and depth of study. The level of demand may also be increased through the development and application of communication, number, ICT and thinking skills across the curriculum.

Schools should choose material (to be covered in depth or in outline) which will:

- provide a meaningful, relevant and motivating curriculum for their learners
- meet the specific needs of their learners and further their all round development.

Developing skills across the curriculum

A non-statutory Skills Framework has been developed in order to provide guidance about continuity and progression in thinking skills, communication, number and ICT for learners from 3–19.

At Key Stages 2 and 3, learners should be given opportunities to build on skills they have started to acquire and develop at Foundation Phase. Learners should continue to acquire, develop, practise, apply and refine these skills through group and individual tasks in a variety of contexts across the curriculum. Progress can be seen in terms of the refinement of these skills and by their application to tasks that move from: concrete to abstract; simple to complex; personal to the 'big picture'; familiar to unfamiliar; and supported to independent and interdependent.

Thinking

Learners develop their thinking across the curriculum through the processes of **planning**, **developing** and **reflecting**.

In ICT, learners plan their activities identifying appropriate software and hardware. They reflect on the needs of the audience for the information they create and develop their presentations accordingly. They use ICT to explore and solve problems in a range of contexts.

Communication

Learners develop their communication skills across the curriculum through the skills of **oracy**, **reading**, **writing** and **wider communication**.

In ICT, learners communicate and present information using text, graphs, pictures and sound to support their activities in a range of contexts. They use ICT to interpret and analyse information and communicate their findings in ways suitable for their intended audience.

ICT

Learners develop their ICT skills across the curriculum by **creating**, **presenting**, **finding** and **developing information and ideas** and by using a wide range of equipment and software.

Number



Learners develop their number skills across the curriculum by **using mathematical information, calculating, and interpreting and presenting results.**

In ICT, learners use mathematical information and data presented numerically and graphically in data handling software. They use number to collect and enter data for interpretation in spreadsheets and simulations and present their findings as graphs and charts.

At Key Stages 2 and 3, learners should be given opportunities to build on their experiences at the Foundation Phase and promote their knowledge and understanding of Wales and their personal and social development and well-being.

Curriculum Cymreig



Learners should be given opportunities to develop and apply their knowledge and understanding of the cultural, economic, environmental, historical and linguistic characteristics of Wales.

In ICT, learners should be given opportunities to find and analyse information about the rich characteristics of Wales and communicate their findings in a variety of ways.

Personal and social education



Learners should be given opportunities to promote their health and well-being and moral and spiritual development; to become active citizens and promote sustainable development and global citizenship; and to prepare for lifelong learning.

In ICT, learners should work in contexts that allow them to make decisions based on the values that underpin society, helping them become active and informed citizens. They begin to identify and question bias in sources of information and become increasingly aware of the social, ethical, moral and economic effects of ICT in the wider world.

Information and communication technology at Key Stage 2

At Key Stage 2, learners should be given opportunities to build on their experiences during the Foundation Phase. They should be taught to consider the sort of information they require to support their tasks and activities and how they might locate that information. To develop and support their work, they use an increasing range of ICT tools and resources to find, process and communicate relevant information from a variety of given safe and approved sources. Learners develop and communicate their ideas in appropriate ways with a developing sense of purpose and audience.

Information and communication technology at Key Stage 3

At Key Stage 3, learners should be given opportunities to build on the knowledge, understanding and skills acquired at Key Stage 2. They should be taught to become increasingly independent in their use of safe and approved information sources both ICT and non-ICT. They develop a growing awareness of the relevance and plausibility of information and begin to identify and question bias in sources. Learners use a range of ICT skills and resources to find, analyse, communicate, present and share information, while becoming more aware of the need to check the accuracy of their work. They begin to understand the advantages and limitations of using ICT in their activities across a range of subjects and become increasingly aware of the social, ethical, moral and economic effects of ICT in the wider society.

Key Stage 2 Programme of Study

Skills

Create and communicate information

Pupils should be given opportunities to:

1. create and communicate information in the form of text, images and sound, e.g. write a poem or story, create, insert or edit an image, create sound/music or video/animation 
2. create a range of presentations combining a variety of information and media, e.g. produce a poster combining text and graphics, develop a multimedia presentation, import a graph to illustrate the results of a survey 
3. share and exchange information electronically, e.g. use of e-mail, school web pages. 

Find and analyse information

Pupils should be given opportunities to:

1. consider their task, e.g. discuss purpose and audience, discuss resources  
2. find information from a variety of sources for a defined purpose, e.g. books, internet, databases, CDs, e-mails
3. select suitable information and make simple judgements about sources of information, e.g. extract relevant text and images from a website 
4. produce and use databases to ask and answer questions, e.g. search, sort and graph, draw conclusions from searching census data 

Range

Pupils should be given opportunities to use:

- ICT tools and approved information sources safely, in accordance with LEA/school guidelines
 - a range of ICT resources and equipment, e.g. computers, printers, cameras, scanners, music keyboards, interactive white boards, CD/DVD players
 - ICT sources of information, e.g. internet, web-based encyclopaedias, digital maps, data files, music files and non-ICT sources, e.g. books, maps, historical documents 
 - ICT to further their understanding of information they have retrieved and processed 
 - ICT to explore and solve problems in the context of work across a variety of subjects 
 - their experiences of using ICT to form judgements about its value in supporting their work.
- Pupils should discuss new developments in ICT and the use of ICT in the wider world. 



5. produce and use spreadsheets to ask and answer questions, e.g. *calculate and graph sales in the school shop, profit/loss of price changes*



6. investigate the effect of changing variables in simulations and similar packages, to ask and answer 'what if...?' type questions, e.g. *adventure games, scientific simulations, use LOGO to investigate shapes and angles.*



Health, safety and child protection



Pupils should be taught how to use ICT safely and to consider the hazards and risks in their activities, e.g. *not disclosing personal details to strangers*. They should be able to follow instructions to minimise risk to themselves and others.

Skills

Create and communicate information

Pupils should be given opportunities to:

1. create and communicate information in the form of text, images and sound, 
e.g. create a newsletter with images text and tables, create images or graphics for displays or web pages, capture, incorporate and edit digital images, create/modify sound, music
2. create and develop a range of presentations for specific purposes and audiences, 
e.g. use higher order functions in a presentation package such as, timing, animation, digital images/video, develop a school website
3. share and exchange information electronically, 
e.g. collaborative use of e-mails with attachments, hyperlinks, web pages.

Find and analyse information

Pupils should be given opportunities to:

1. plan their task, *e.g. identify purpose and audience, identify appropriate resources* 
2. find relevant information from a variety of sources for a defined purpose, *e.g. search the internet, analyse databases, questionnaires and surveys, e-mails, books, magazines and newspapers*
3. select relevant information and make informed judgements about sources of information, 
e.g. is the website/book/CD up to date/reliable, has the information source a particular bias?

Range

Pupils should be given opportunities to use:

- ICT tools and approved information sources safely, in accordance with LEA/school guidelines
 - a range of ICT resources and equipment, *e.g. computers, printers, cameras, scanners, music keyboards, interactive white boards, CD/DVD players, MP3 players*
 - a range of information considering how its characteristics, structure and purpose influences its use with ICT 
 - ICT to analyse data and produce new information on which to draw conclusions 
 - their knowledge and understanding of ICT to design information systems and evaluate existing systems suggesting improvements 
 - ICT to explore and solve problems in work across a variety of subjects 
 - their experiences of ICT to form judgements about its value in supporting their work.
- Pupils should recognise new developments in ICT and consider the social, economic, ethical and moral issues raised by the impact and use of ICT. 



4. produce and use databases to analyse data and follow particular lines of enquiry, *e.g. use simple and complex queries (searches/sort), analyse the results of a questionnaire survey* 
5. produce and use spreadsheets to analyse data and test hypotheses, *e.g. changing data and formula* 
6. investigate more complex patterns and relationships, *e.g. spreadsheets, simulations, build procedures in LOGO.* 

Health, safety and child protection

Pupils should be taught how to use ICT safely and to consider the hazards and risks in their activities. They should be able to follow instructions to minimise risk to themselves and others and understand that disclosing personal details can put themselves and others at risk.

The following national curriculum outcomes are non-statutory. They have been written to recognise the attainment of pupils working below Level 1. National curriculum outcomes 1, 2 and 3 align with the Foundation Phase outcomes 1, 2 and 3.

The national curriculum outcomes describe the types and range of performance that pupils working at a particular outcome should characteristically demonstrate. In deciding on a pupil's outcome of attainment at the end of a key stage, teachers should judge which description best fits the pupil's performance. Each description should be considered in conjunction with the descriptions for adjacent outcomes.

Outcome 1

Pupils use simple computer programmes through a range of access devices and make connections between the control device and the information on screen. They begin to select letters and symbols to communicate about themselves and their immediate interests.

Outcome 2

Pupils can follow simple instructions. They use ICT to interact with others and respond to questions, making connections and simple predictions based on their previous ICT experience. Pupils use ICT to express their ideas and feelings, e.g. choosing photographs for recording work or telling a story. They begin to use a range of programmes to record and present ideas and feelings and understand that information can be saved.

Outcome 3

Pupils can sequence up to four key pictures/words/symbols to communicate their developing knowledge of ICT and its use. They begin to choose equipment and software for familiar activities and can load a resource and make choices from it, e.g. a game from disk, a music track from CD.



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Level descriptions

The following level descriptions describe the types and range of performance that pupils working at a particular level should characteristically demonstrate. In deciding on a pupil's level of attainment at the end of a key stage, teachers should judge which description best fits the pupil's performance. Each description should be considered in conjunction with the descriptions for adjacent levels.

By the end of Key Stage 2, the performance of the great majority of pupils should be within the range of Levels 2 to 5, and by the end of Key Stage 3 within the range 3 to 7. Level 8 is available for very able pupils and, to help teachers differentiate exceptional performance at Key Stage 3, a description above Level 8 is provided.

Level 1

Pupils follow the teacher's instructions when undertaking tasks. They explore different types of information held on ICT systems. They use ICT to move objects on screen for a defined purpose and use words and pictures to communicate ideas. They are aware of ICT in their world.

Level 2

Pupils begin to think about how they are going to undertake their task. They create and communicate information and ideas in different forms using text, images, pictures and sound. They find information from a given source using it to answer simple questions. Pupils explore the effects of making changes in models and simulations and store and retrieve work with some assistance. They are aware of the use of ICT in the outside world.

Level 3

Pupils begin to organise their task and use ICT to create, organise, amend and present information and ideas. They find information from a range of given sources and use ICT to search, sort and/or graph data to follow simple lines of enquiry. They begin to collect data and understand how changing one thing affects another in models and simulations. They recognise the different parts of a computer system.

Level 4

Pupils broadly plan their task and combine a variety of information and media when creating and developing their ideas, with a sense of purpose and audience. They use ICT to select relevant information from a range of given sources, recognising that poor quality information and data yields unreliable results. Pupils begin to check the validity of data and amend records in databases. They use ICT to explore patterns and relationships and make simple predictions about how changing one thing affects another in spreadsheets and simulations. They send and receive information electronically. Pupils discuss and begin to form opinions about some of the issues raised by the use of ICT and internet safety. They use the internet in accordance with given guidelines.

Level 5

Pupils plan their tasks for purpose and audience. They combine a variety of information and media when creating and developing their own ideas and information. Their presentations are fit for purpose and meet the needs of their intended audience. They search for and select information from a range of sources, considering relevance, plausibility and accuracy. Pupils create their own databases and search or sort on more than one field to follow particular lines of enquiry. They create their own spreadsheets and investigate the effect of changing data. They use ICT to send and receive files electronically. Pupils form opinions about issues raised by the use of ICT and are aware of dangers associated with misuse of the internet. They use the internet in accordance with given guidelines.

Level 6

Pupils plan their tasks in detail for specific purposes and audiences. They use ICT to create and refine their work using information from a range of sources recognising the need for different styles for different audiences. They use ICT to check accuracy and plausibility by comparing information from different sources making choices to meet the needs of a specific purpose or audience. They use databases to follow complex lines of enquiry and draw conclusions. They use spreadsheets and simulations of increasing complexity, vary the rules within them and test hypotheses. Pupils have opinions about issues raised by the use of ICT and know the dangers associated with misuse of the internet. They use the internet in accordance with given guidelines.

Level 7

Pupils plan independently for different purposes and audiences specifying resources and sources. They refine their choice of selected information to match the needs of a specific purpose or audience. Pupils identify the advantages and limitations of different applications and select and use suitable ICT facilities. They make appropriate choices between different data handling applications, based on their specialised functions. They design computer models and procedures, with variables, to meet specific needs. Pupils have informed opinions of the issues raised by the use of ICT in the wider world. They use the internet in accordance with given guidelines.

Level 8

Pupils plan independently for a specific purpose and refine in the light of development. They make informed judgements on selected information, evaluating its plausibility, accuracy and relevance to purpose and audience. Pupils design and implement ICT systems for others to use. They create presentations for others to meet specific requirements. They discuss in an informed way the social, economic, ethical and moral issues raised by ICT. They use the internet in accordance with given guidelines.

Exceptional Performance

Pupils evaluate software packages and complex computer models, analysing the situation for which they were developed, and assess their efficiency, ease of use and appropriateness, suggesting possible refinements. Pupils design, implement and document systems for others to use, predicting some of the consequences that could arise in use. When discussing their own and others' use of ICT, they relate their understanding of the technical features of information systems to an appreciation of how those systems affect wider social, economic, ethical and moral issues. They use the internet in accordance with given guidelines.