

INFORMATION TECHNOLOGY

*in the
National Curriculum
in Wales*



AWDURDDOD
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FOR WALES



Cynulliad Cenedlaethol Cymru
The National Assembly for Wales

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National Assembly for Wales
Cathays Park
Cardiff
CF10 3NQ

ACCAC
Castle Buildings
Womanby Street
Cardiff
CF10 9SX

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FOREWORD

This document sets out the revised National Curriculum for information technology in Wales.

● The structure of the National Curriculum

The National Curriculum applies to pupils of compulsory school age in maintained schools. It is organised on the basis of four **key stages**, which are broadly as follows*:

	Pupils' ages	Year groups
Key Stage 1	5 – 7	1 – 2
Key Stage 2	7 – 11	3 – 6
Key Stage 3	11 – 14	7 – 9
Key Stage 4	14 – 16	10 – 11

In Wales, the following **subjects** are included in the National Curriculum at the key stages shown:

Key Stages 1 and 2	English (except at Key Stage 1 in Welsh-speaking classes), Welsh, mathematics, science, technology (design and technology and information technology) history, geography, art, music and physical education
Key Stage 3	as at Key Stages 1 and 2, plus a modern foreign language
Key Stage 4	English, Welsh, mathematics, science and physical education.

For each subject, in each of the key stages listed above, **programmes of study** set out what pupils should be taught and, for Key Stages 1 to 3, **attainment targets** set out the expected standards of pupils' performance.

At the end of Key Stages 1, 2 and 3, standards of pupils' performance are set out in eight **level descriptions** of increasing difficulty, with an additional description above level 8 to help teachers in differentiating exceptional performance.

* The key stages are defined precisely in section 355 of the Education Act 1996

At **Key Stage 4**, external qualifications are the main means of assessing attainment in the National Curriculum. The National Assembly for Wales publishes annually the list of qualifications that, under Section 400 of the Education Act 1996, are approved for use with pupils of compulsory school age.

● Access for all pupils

The revised National Curriculum provides teachers with greater flexibility to respond to the needs of pupils with identified special educational needs, including gifted and talented pupils. The statement on access for all pupils in the section on Common Requirements increases the scope for teachers to provide such pupils with appropriately challenging work at each key stage.

● Implementation dates

The revised programmes of study and attainment target for information technology become legal requirements by means of an Order made by the National Assembly of Wales and come into effect on 1 August 2000 for all year groups in Key Stages 1, 2 and 3.

From this date the existing National Curriculum for information technology is superseded.

National Assembly for Wales

January 2000

COMMON REQUIREMENTS

Access for all pupils

The programme of study for each key stage should be taught to the great majority of pupils in the key stage, in ways appropriate to their developing maturities and abilities.

For those pupils who may need the provision, material may be selected from earlier key stages where this is necessary to enable individual pupils to progress and demonstrate achievement. Such material should be presented in contexts suitable to the pupil's age and experience.

For gifted and talented pupils material should be presented in ways which encourage further enquiry, research, problem solving and creative thinking. Material from later key stage programmes of study may be used to enable such pupils to make further progress.

Appropriate provision should be made for pupils who need to use:

- means of communication other than speech, including computers, technological aids, signing, symbols or lip-reading
- non-sighted methods of reading, such as Braille, or non-visual or non-aural ways of acquiring information
- technological aids in practical and written work
- aids or adapted equipment to allow access to practical activities within and beyond school.

Appropriate provision should be made for pupils whose first language is not English or Welsh

Judgements made in relation to the level descriptions should allow for the provision above, where appropriate.

Referencing

The numbers throughout the programme of study are for referencing purposes only and do not necessarily indicate a particular teaching sequence or hierarchy of knowledge, understanding and skills.

Examples

Examples printed in italics are non-statutory.

Teachers should provide opportunities, where appropriate, for pupils to develop and apply the following common requirements through their study of information technology. The number and range of such opportunities are for teachers to determine in the context of their school's scheme of work.

Where a statement or section of a programme of study is explicitly linked to a particular common requirement, this is indicated by means of one of the symbols below. The use of the symbol indicates that teaching the identified aspect of the subject will, at the same time, contribute to the common requirement.



Curriculum Cymreig

Pupils should be given opportunities, where appropriate, in their study of information technology to develop and apply knowledge and understanding of the cultural, economic, environmental, historical and linguistic characteristics of Wales.



Communication Skills

Pupils should be given opportunities, where appropriate, in their study of information technology to develop and apply their skills of speaking, listening, reading, writing and expressing ideas through a variety of media.



Mathematical Skills

Pupils should be given opportunities, where appropriate, in their study of information technology to develop and apply their knowledge and skills of number, shape, space, measures and handling data.



Information Technology Skills

Pupils will have opportunities throughout their study of information technology to develop and apply their IT skills to obtain, prepare, process and present information and to communicate ideas with increasing independence.



Problem-Solving Skills

Pupils should be given opportunities, where appropriate, in their study of information technology to develop and apply their skills of asking appropriate questions, making predictions and coming to informed decisions.



Creative Skills

Pupils should be given opportunities, where appropriate, in their study of information technology to develop and apply their creative skills, in particular the development and expression of ideas and imagination.



Personal and Social Education

Pupils should be given opportunities, where appropriate, in their study of information technology to develop and apply the attitudes, values, skills, knowledge and understanding relating to Personal and Social Education.






Focus Statement


At Key Stage 1 pupils should be taught to become familiar with Information and Communications Technology (ICT) hardware and software. They learn to use ICT confidently and purposefully to achieve specific outcomes. They start to use ICT to develop their ideas and record their creative work.

1. Communicating and Handling Information

Pupils should be taught to:

-  1. generate and communicate their ideas in different forms, using text, tables, pictures and sound as appropriate, *e.g. creating a picture from a selection of objects displayed on the screen to illustrate a story*
-  2. enter and store information, *e.g. saving work, adding information to an existing data file and saving for future use*
-  3. retrieve, process and display information that has been stored, *e.g. use a prepared database of information on the class to ask questions such as 'How many have blue eyes?', 'Who is the tallest?' and display the information as charts or graphs.*

Pupils should be given opportunities to:

- use information from a variety of sources and investigate how it may be presented
- use a variety of ICT equipment and software, including microcomputers and various input devices, to carry out a variety of functions in a range of contexts
- explore the use of computer systems in everyday life
-  ● examine and discuss their experiences of ICT, and look at the use of ICT in the outside world.

2. Modelling

Pupils should be taught to:

1. use ICT-based models or simulations to try things out and explore aspects of real and imaginary situations, *e.g. use a mouse to move items of clothing displayed on the screen to dress a child or teddy bear, use an adventure game.*



Focus Statement

At Key Stage 2 pupils should be given opportunities to build on the knowledge, understanding and skills acquired at Key Stage 1. They should be taught to use a greater range of Information and Communications Technology (ICT) tools and information sources to support their work in other subjects. They become discerning in their use of ICT, and select information, sources and media appropriate to their work. They amend their work and present it with some thought to its audience. They assess the value of ICT in their working practices.

1. Communicating and Handling Information

Pupils should be taught to:

1. use ICT equipment and software to communicate, share and exchange ideas and information in a variety of forms, incorporating text, graphs, pictures and sound, as appropriate, showing sensitivity to the needs of their audience, *e.g. create a poster to advertise a school concert using clip-art and an art package; attach a document to an e-mail, multimedia presentation*
2. use ICT equipment and software to organise, reorganise and analyse ideas and information, *e.g. use a word processor to experiment with different page layouts, musical composition*
3. select suitable information and media, and classify and prepare information for processing with ICT, checking for accuracy, *e.g. use a simple database to store daily information about the weather; check its accuracy before entry and produce graphs to show weather patterns*
4. interpret, analyse and check the plausibility of information held on ICT systems, and select the elements required for particular purposes, considering the consequences of any errors, *e.g. searching the Internet or a CD-ROM for information to support an investigation and make predictions, for example, the impact of pollution and population growth.*

Pupils should be given opportunities to:

- consider what kinds of information is needed and how they can find and use it
- use ICT to further their understanding of information that they have retrieved and processed
- use ICT to explore and solve problems in the context of work across a variety of subjects
- discuss their experiences of using ICT and assess its value in their working practices
- investigate the use of ICT in the wider world, consider the effects of such uses and compare them with other methods.

2. Modelling

Pupils should be taught to:

1. explore the effect of changing variables in simulations and similar packages, to ask and answer questions of the 'What would happen if...?' type, *e.g. change the values in a given Logo procedure and see the results*
2. recognise patterns and relationships in the results obtained from ICT-based models or simulations, predicting the outcomes of different decisions that could be made, *e.g. use a prepared spreadsheet to enter sales, income and payments to the school tuck shop and produce a short report to identify sales for each item and how changes could improve profitability; use a mathematical adventure game.*






Focus Statement



At Key Stage 3 pupils 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 users of Information and Communications Technology, aware of the ways in which ICT tools and information sources can help them in their work. They think about the quality and plausibility of information and access and combine increasing amounts of information. They understand the limitations of ICT tools and of the results they produce and use the concepts associated with ICT systems and software and the associated technical terms.

1. Communicating and Handling Information

Pupils should be taught to:


-  1. use a range of ICT equipment and software efficiently to create presentations for particular audiences by sharing, exchanging and integrating several forms of information
2. select appropriate ICT equipment and software to fulfil their specific purposes
3. be systematic in their use of appropriate search methods to obtain accurate and relevant information from a range of ICT sources
-  4. collect and amend quantitative and qualitative information for a particular purpose, and enter it into a data-handling package for processing and analysis
-  5. interpret, analyse and display information, checking its accuracy and questioning its plausibility.

Pupils should be given opportunities to:

- work with different kinds of information considering how its characteristics influence its use
- use ICT equipment and software independently
- consider the purposes for which information is to be processed and communicated
- use their knowledge and understanding of ICT to design information systems, and to evaluate and suggest improvements to existing systems
-  ● investigate and solve problems by computer modelling
- consider the limitations of ICT tools and information sources, and of the results they provide, and compare their effectiveness and efficiency with other methods of working
-  ● discuss some of the social, economic, ethical and moral issues raised by ICT.

2. Modelling

Pupils should be taught to:

1. explore a given model with a number of variables and create models of their own, *e.g. working with spreadsheets, simulations and constructing efficient procedures in macros and templates*
2. use models to detect patterns and relationships, *e.g. using number grids in mathematics*
-  3. modify the rules and data of a model, and predict the effects of such changes, *e.g. change the formulae in a price/sales spreadsheet, change the balance of predator and prey in a simulation of an ecosystem*
4. evaluate a computer model by comparing its behaviour with data gathered from a range of sources.

ATTAINMENT TARGET

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 1, the performance of the great majority of pupils should be within the range of Levels 1 to 3, by the end of Key Stage 2 it should be within the range 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.

Attainment Target: Information Technology

Level 1

Pupils use ICT to assemble text and symbols to help them communicate ideas. They explore information held on ICT systems, showing an awareness that information exists in a variety of forms.

Level 2

Pupils use ICT to help them generate and communicate ideas in different forms, such as text, tables, pictures and sound. With some support, they retrieve and store work. They use ICT to sort and classify information and to present their findings. They use ICT-based models or simulations to investigate options as they explore aspects of real and imaginary situations.

Level 3

Pupils use ICT to generate, amend, organise and present ideas. They use ICT to save data and to access stored information, following straightforward lines of enquiry. They use ICT-based models or simulations to help them make decisions, and are aware of the consequences of their choices. They describe their use of ICT, and its use in the outside world.

Level 4

Pupils use ICT to share, exchange and combine different forms of information, and show an awareness of audience. They add to, amend and interrogate information that has been stored. They understand the need for care in framing questions when collecting, accessing and interrogating information. Pupils interpret their findings, question plausibility and recognise that poor quality information yields unreliable results. They use ICT-based models and simulations to explore patterns and relationships, and make simple predictions about the consequences of their decision making. They compare their use of ICT with other methods.

Level 5

Pupils use ICT to organise, refine, share, exchange and present information in different forms and styles for specific purposes and audiences. They select the information needed for different purposes, check its accuracy and organise and prepare it in a form suitable for processing using ICT. They explore the effects of changing the variables in a computer model. They communicate their knowledge and experience of using ICT and assess its use in their working practices.

Level 6

Pupils are becoming increasingly skilful in the use of techniques identified in the Key Stage 3 Programme of Study to develop and refine work, using information from a range of sources, and demonstrating a clear sense of audience and purpose in their presentation. They successfully test hypotheses requiring complex lines of enquiry. Pupils use computer models of increasing complexity, vary the rules within them, and assess the validity of these models by comparing their behaviour with other data. They discuss the wider impact of ICT on society.

Level 7

Pupils are competent in the use of techniques identified in the Key Stage 3 Programme of Study and combine a variety of forms of electronic and other information for presentation to different audiences. They identify the advantages and limitations of different information-handling applications, and select and use suitable information systems, translating enquiries expressed in ordinary language into forms required by the system. They design computer models or procedures, with variables, which meet identified needs. They consider the limitations of ICT tools and information sources, and of the results they produce.

Level 8

Pupils apply the knowledge and understanding identified in the Key Stage 3 Programme of Study to select the appropriate ICT facilities for specific tasks, taking into account ease of use and suitability for purpose. They design and implement systems for others to use. They design successful means of capturing and, if necessary, preparing information for computer processing. They discuss in an informed way the social, economic, ethical and moral issues raised by ICT.

Exceptional Performance

Pupils apply the knowledge and understanding identified in the Key Stage 3 Programme of Study to evaluate software packages and complex computer models, analysing the situation for which they were developed and assessing their efficiency, ease of implementation and appropriateness. They suggest refinements, and design, implement and document systems for others to use, predicting some of the consequences that could arise. 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.

