

Programme of study: ICT (Key stage 3)

Curriculum aims

Learning and undertaking activities in information and communication technology (ICT) contribute to achievement of the curriculum aims for all young people to become:

- successful learners who enjoy learning, make progress and achieve
- confident individuals who are able to live safe, healthy and fulfilling lives
- responsible citizens who make a positive contribution to society.

The importance of ICT

The increasing use of technology in all aspects of society makes confident, creative and productive use of ICT an essential skill for life. ICT capability encompasses not only the mastery of technical skills and techniques, but also the understanding to apply these skills purposefully in learning, everyday life and employment. ICT capability is fundamental to participation and engagement in modern society.

ICT can be used to find, use, develop, analyse and present information, as well as to model situations and solve problems. ICT enables rapid access to ideas and experiences from a wide range of people, communities and cultures, and allows pupils to collaborate and exchange information on a wide scale. ICT acts as a powerful force for change in society and citizens should have an understanding of the social, ethical, legal and economic implications of its use, including how to use ICT safely and responsibly. Increased capability in the use of ICT supports initiative and independent learning, as pupils are able to make informed judgements about when and where to use ICT to enhance their learning and the quality of their work.

Key concepts

There are a number of key concepts that underpin the study of ICT. Pupils need to understand these concepts in order to deepen and broaden their knowledge, skills and understanding.

Capability

- Understanding that ICT is a powerful tool, which allows people to [manipulate information](#) efficiently in ways that were previously impossible or time consuming.
- Recognising issues of risk and safety surrounding the use of ICT.
- Applying ICT across a range of contexts, in other areas of learning, [work and life](#).

[Communication and collaboration](#)

- Exploring the ways that ICT can be used to communicate, collaborate and share ideas easily on a global scale, allowing people to work together in new ways and changing the way in which knowledge is created.

Modelling and [exploring ideas](#)

- Using ICT to model different scenarios, allowing people to identify patterns and test hypotheses.
- Solving problems creatively by using ICT to explore ideas and try alternatives.

Impact of technology

- Exploring how ICT changes the way we live our lives and has significant [social, ethical and cultural implications](#).

Critical evaluation

- Recognising that information must not be taken at face value, but must be analysed and evaluated to take account of its purpose, author, currency and context.

Manipulate

For example through speed of processing, ability to automate.

Information

For example text, numbers, still and moving images, graphics and sound.

Work and life

For example project planning, diaries, folders.

Communication and collaboration

Communicating with real and authentic audiences, for example by using blogs, wikis, collaborative software and collaborative websites.

Exploring ideas

For example trying different options, using the 'undo' function and saving different versions, using existing knowledge, skills and understanding of ICT in new contexts and purposes.

Social, ethical and cultural implications

This could include issues relating to ownership, copyright, plagiarism; issues of privacy of information; effects on employment and working practices; effects on local communities; sustainability issues; the causes and implications of unequal access to ICT locally, nationally and globally. Pupils should appreciate that the cultural background of the receiver may influence the way the information is interpreted.

Key processes

These are the essential skills and processes in ICT that pupils need to learn to make progress.

Finding information

Pupils should be able to:

- consider systematically the information needed to solve a problem, complete a task or answer a question, and [explore](#) how it will be used
- use and [refine search methods](#) to obtain information that is well matched to purpose, by selecting different and appropriate sources
- collect and enter quantitative and qualitative information, [checking its accuracy](#)
- analyse and evaluate information, [questioning the plausibility and value](#).

Developing ideas

Pupils should be able to:

- select and [use ICT tools efficiently](#), and techniques safely and appropriately
- [solve problems](#) by developing, exploring and structuring information, and deriving new information for a particular purpose
- test predictions and discover patterns and relationships by changing their [rules and values](#), and by exploring, evaluating and [developing models](#)
- design information systems and suggest improvements to existing systems
- use ICT to make things happen and to [plan, test and modify](#) a sequence of instructions, recognising where a group of instructions need repeating, and [automating](#) frequently used processes by constructing efficient procedures that are fit for purpose
- bring together, draft, and [refine information](#) to suit audience, purpose and content.

Explore

This could include discussing the information with peers, teachers or the project team.

Refine search methods

For example developing a single criteria search into a search with multiple criteria, or using the advanced search functions in most search engines or Boolean operators (and, or, +, -, not).

Checking its accuracy

For example by rechecking data entry and comparing with other sources.

Questioning the plausibility and value

This includes taking account of the source of the information to make judgements on its plausibility, accuracy, completeness, currency, reliability and to assess bias and partiality. This could also include understanding the different suffixes of web addresses (eg '.co', '.org' and '.ac').

Use ICT tools efficiently

For example master pages and slides, programs to compress graphic files, navigational menus and automated features, templates and macros.

Solve problems

For example reaching conclusions by exploring, combining, manipulating, synthesising and repurposing information, deriving totals from raw data, transforming data from numeric table to graphical interpretation, organising information by use of appropriate data types and data structures, including non-linear structuring, for example hyperlinks.

Rules and values

For example altering variables and formulae in a spreadsheet model.

Developing models

The process of developing models is iterative. This could include:

- reviewing and modifying work as it progresses
- using a computer program to explore real and/or imaginary scenarios
- exploring possibilities by answering 'what if' questions, testing and exploring cause and effect.

Plan, test and modify

For example use of Logo, use of HTML to create webpages, JavaScript and control programs.

Automating

For example saving sequences of instructions as component parts.

Refine information

This could include improving quality and adapting to feedback.

Communicating information

Pupils should be able to:

- use a range of ICT tools to present information in forms that are fit for purpose, meet audience needs and suit the content
- communicate and share information effectively, safely and responsibly
- communicate information in different ways, including the combination of text, sound and image
- use technical terms appropriately and correctly.

Evaluating

Pupils should be able to:

- review, modify and evaluate work as it progresses, reflecting critically and using feedback
- reflect on their own and others' uses of ICT to help them develop and improve their ideas and the quality of their work
- reflect on what they have learnt and use these insights to improve future work.

Effectively

Effective communication must be sensitive to the target audience (for example appropriate form, style and convention must be considered) and efficient in transferring information.

Safely and responsibly

When using digital communication, pupils should develop an understanding of safe practices and follow them. For example they should be cautious about sharing personal information and viewing digital images. They should also recognise the need to show respect towards others.

Combination of text, sound and image

This includes considering the interplay of sound, moving image, graphics, commentary, text, and other content.

Reflecting critically

This could include self-review, peer evaluation, user or audience feedback. Pupils could judge how effectively they use ICT as well as considering the quality of their work.

Range and content

This section outlines the breadth of the subject on which teachers should draw when teaching the key concepts and key processes.

The study of ICT should enable pupils to apply their knowledge, skills and understanding to relevant real-world situations.

This should include:

- a range of information, with different characteristics, structures, organisation and purposes, evaluating its match to requirements and fitness for purpose
- use of a variety of information sources in a range of contexts
- use and review the effectiveness of a range of ICT tools including a range of [software applications](#) to meet the needs of the user and solve problems
- use of ICT to [manage work and learning](#)
- developing an understanding of the need for:
 - [safe working practices](#) in order to minimise physical stress
 - [keeping information secure](#)
 - managing information storage and access, including working with [files and folders](#) to organise, store and retrieve information to secure content and enable efficient retrieval
- [the impact of ICT](#) on individuals, communities and society, including the social, economic, legal and ethical implications of the use of ICT.

Software applications

For example word-processing, spreadsheet, graphics, browser, email.

Manage work and learning

This includes using ICT to plan and review work; using ICT to create and maintain an up-to-date, logically structured portfolio of digital evidence of learning.

Safe working practices

For example adjust seating and lighting, avoid hazards, take breaks, arrangement of hardware and cables, wrist rests and other devices.

Keeping information secure

For example keeping copies safe, backup of work, and protection of password or PIN.

Files and folders

For example using appropriate file names, classifying folders in a meaningful way, using password protection, using back up files.

The impact of ICT

This could include issues relating to copyright, plagiarism and effects on employment and local communities. Pupils could also consider the causes and implications of unequal access to ICT locally, nationally and globally.

Curriculum opportunities

During the key stage pupils should be offered the following opportunities that are integral to their learning and enhance their engagement with the concepts, processes and content of the subject.

The curriculum should provide opportunities for pupils to:

- make choices about when and where it is appropriate to exploit technology to support them in their everyday life to use ICT to manage, and be independent and discriminating when doing so work creatively and collaboratively
- apply ICT to real-world situations when solving problems and carrying out a range of tasks and enquiries
- share their views and experiences of ICT, considering the range of its uses and its significance to individuals, communities and society
- use ICT in contexts drawn from other subjects and areas of learning that are relevant and interesting to pupils.

Appropriate to exploit technology

Pupils should be encouraged to be discriminating in their choice of when, where and how to use ICT.

Use ICT to manage

Using planning tools, e-portfolios, calendars and alerts as well as files and folders to organise, store and retrieve work.

Collaboratively

This includes using collaborative learning communities and working together to create a solution to a problem.

Real-world situations

This could include case studies based on or drawn from examples outside the school environment, for example information systems used in the local community.

Contexts drawn from other subjects and areas of learning

For example designing a website or designing and producing a multimedia presentation.