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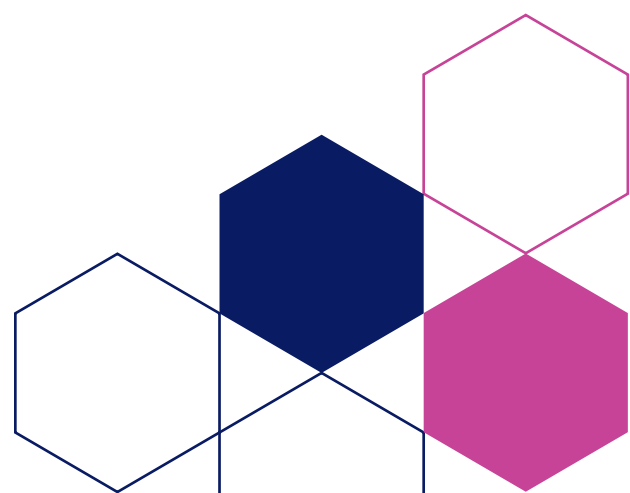
Northern Ireland Curriculum 2028

An entitlement to excellence and equity

Digital technology

Draft curriculum framework for Public Consultation

This document forms part of a suite of curriculum materials published for consultation





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Vision statement

Digital technology opens doors for children and young people to understand, shape and thrive in a world increasingly structured by digital systems. The subject is concerned not merely with learning how to use devices and digital applications but with developing insights into concepts, structures and decisions that underpin digital life. It equips learners to uncover the ideas that sit beneath every digital interaction. Through studying how information is represented, processed and transmitted, pupils come to understand the hidden architectures that shape communication, automation and decision making in the modern world. Pupils trace the hidden journey of data as it flows through connected systems and automations that shape our lives. They learn about and weigh the human decisions which influence the technology we rely on every day. In doing so, pupils gain secure, cumulative knowledge of core ideas such as abstraction, logic, representation, systems and control. As this knowledge builds over time, it enables pupils to reason more precisely about how digital technologies work, why they behave as they do, and how they might be adapted or improved.

Applying this knowledge within disciplined inquiry, pupils develop the capacity to investigate, design and create digital solutions with purpose. By studying how systems function and by questioning their impact on our communities, learners develop the insight needed to build digital tools that serve real human needs. These experiences build the confidence to navigate digital spaces with curiosity, creativity and ethical awareness. Pupils learn to evaluate the impact of digital systems on individuals, communities and societies, and to recognise that technological progress always involves judgement and trade-offs.

Digital technology education fosters habits of attention essential for life in a digital world. Pupils learn to work logically and to refine their thinking. Digital technology supplies the knowledge and skill to manage great complexity and to collaborate purposefully within that complexity. Crucially, digital technology prepares young people not just to participate in a digital world but to shape it. It fosters informed citizens, imaginative problem solvers, and future professionals ready to contribute to a rapidly evolving global landscape.



Subject-specific categories

The subject framework is structured using three subject-specific categories:

- computing and digital systems
- digital creation and communication
- digital ethics and responsibility

Computing and digital systems

In order to develop their computational thinking and to understand the principles of software engineering, pupils learn to master rules governing sequences, algorithms and Boolean logic. They gain independence in planning, prototyping, testing and debugging solutions, progressing from block-based programming to text-based languages and understanding how code generation tools extend human problem-solving. Through this knowledge and through practising its application, pupils develop a secure grasp of computer systems and infrastructure. They explore device architecture, networks connecting people and information, and the role of operating systems in maintaining efficiency and security.

Pupils learn how to use data to model real-world scenarios, to test ideas, and to simulate outcomes, studying emerging technologies to understand how machines identify patterns and support human decisions. Pupils evaluate the benefits, limitations, and ethical implications of these developments, enabling them to navigate ongoing digital change with confidence.

Digital creation and communication

Pupils develop their ability to create and manage digital content, starting with simple digital mark making at Foundation Stage and progressing to sophisticated multimedia products by Key Stage 2. This transforms them from passive observers of technology to become creators who use sound, image and code to bring their original ideas to life. By Key Stage 3, pupils learn to apply user-centred design principles, tailoring digital solutions to real user needs and behaviours.

At the same time, pupils learn to adapt their style for different audiences and collaborate using a variety of digital tools. They also learn how precise searches and artificial intelligence (AI) prompts affect the accuracy and reliability of the information they gather.

Digital ethics and responsibility

Learning about identity, privacy and cybersecurity helps pupils to understand how personal information is created, protected, and sometimes exploited online. Pupils analyse the consequences of data breaches and learn strategies for safeguarding their identity, as well as the importance of verifying sources and understanding content licensing and intellectual property.

Pupils also examine the environmental impacts of digital technology, from the use of rare minerals to the resource demands of data centres. At Key Stage 3, accessibility and inclusive design principles are introduced ensuring digital products can be used by everyone.

Understanding and using the subject-specific categories

The three categories are interconnected. During teaching, aspects of these three categories will be combined. Through learning about computing and digital systems, pupils gain knowledge of principles, structures and systems that underpin digital creation and communication. Through study of digital creation and communication, knowledge of computing and digital systems is enhanced and can be applied to digital design, digital representation and the creation of digital products. Attention to digital ethics and responsibility will be present in all teaching and must shape how digital technology is learned.



Foundation Stage

The journey begins with the awe of cause-and-effect, where a child's simple command brings a digital toy to life or turns a silent screen into a canvas for original stories. As they progress, pupils realise that technology is not just a tool, but a functional system that enhances everyday life, allowing them to navigate real-world maps and predict the weather before they even step outside. Through guided play, children understand computational thinking by decomposing tasks and using directional commands to move programmable robots.

Pupils recognise icons and labels as symbols for navigating devices and hardware. In this way, they lay the first, secure foundations for learning about abstraction in Key Stage 2. They create and organise digital assets, including text, images, sounds and video, and learn to enter data into charts for visual organisation. Early typing skills enable them to communicate short messages, fostering foundational digital knowledge and an understanding of how information is shared instantly.

Children develop an awareness of safe, thoughtful choices by engaging with real-world tools like weather apps or digital maps. Teaching lays foundations for digital responsibility by emphasising the importance of trusted adults and ensuring that screen time is limited, and punctuated with taking a break and movement.

Computing and digital systems

Pupils should learn:

- that icons and labels identify and select specific shortcuts (e.g. a home or save icon) to navigate digital environments
- that tasks can be managed by decomposing them i.e. breaking them down into a sequence of ordered steps
- how to use directional commands such as forward, backwards and turn to make a programmable robot move in a predictable way
- that data can be entered into a system to create a simple block chart
- that different types of digital hardware, including computers, mobile devices and peripherals (e.g. printers), are designed for specific functional tasks

Digital creation and communication

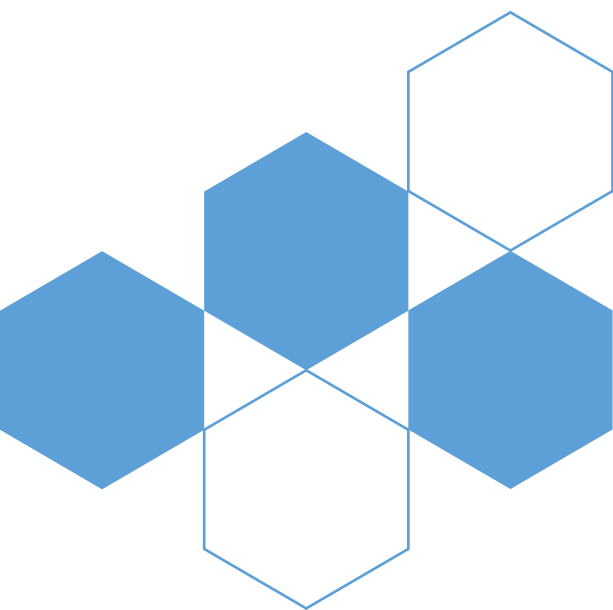
Pupils should learn:

- that digital devices can capture images, sounds and video, which can be intentionally sequenced and changed
- to use a keyboard to type letters, numbers and simple punctuation
- that digital communication enables instant sharing, connecting individuals across different locations

Digital ethics and responsibility

Pupils should learn:

- the signals to seek guidance from a trusted adult, such as feelings of discomfort or uncertainty
- that safety is protected by distinguishing between known, trusted adults and online strangers
- that prolonged screen use affects the body, and that recognising physical signals (e.g. tired eyes) is necessary to maintain health





Key Stage 1

In Key Stage 1, digital technology shifts towards purposeful intent. Pupils develop an understanding of the logic of how tools function, focusing on the precision of input required for predictable results. They learn that systems consist of interconnected parts: inputs, a Central Processing Unit (CPU), and outputs.

Pupils develop technical fluency by choosing digital media files to reach an audience and mastering file management by saving their creations in logical folders. They apply these skills by using keywords to find information and following structured algorithms using sequence and selection. By navigating shared spaces, pupils see technology as a structured environment they can control. They learn that debugging is the process of fixing sequences to improve results. Digital tools are used to organise information, by using records to represent single objects or people.

As part of digital responsibility, pupils learn to protect their identity using private passwords and recognise that apps collect data to influence behaviour. Finally, they develop an awareness of how their use of technology and the lifecycle of digital devices can impact the environment.

Computing and digital systems

Pupils should learn that:

- digital representations are simplified versions of the real world, created by selecting the most important features of an object
- an algorithm is a sequenced set of instructions designed to solve a specific problem
- solutions can be developed using sequence (order) and selection (choices)
- block-based programs are logical sequences where inputs (triggers) produce specific, predictable outputs (results)
- a programmable robot follows a precise, ordered sequence of instructions
- debugging is the process of noticing when a sequence of instructions does not work and making changes to improve the result
- a collection of attributes (records in databases and rows in spreadsheets) represents one single person, place or thing

- a computer system consists of interconnected parts, each with a specific role: input devices (e.g. keyboards) capture data, the CPU processes the data, and output devices (e.g. monitors) communicate the results

Digital creation and communication

Pupils should learn:

- that digital products are built by combining various assets (e.g. graphics, text, audio, and interactive elements) which are designed and organised to meet the goals of the project
- that specific keys (e.g. Delete, Enter, Shift) act as commands to edit and structure digital text, while punctuation and special characters are symbols used to convey meaning
- that digital information can be found and retrieved efficiently by assigning meaningful filenames when saving and grouping content into logical folders
- to use digital tools to send and receive simple messages to respond to others and work together politely in a shared digital space

Digital ethics and responsibility

Pupils should learn that:

- passwords are a form of personal security information and must be kept private to protect their digital identity
- apps, games and websites collect data about individuals which may be used to sell products or influence behaviour
- some apps and games are designed with features that influence behaviour, such as longer use or in-app purchases
- the production and replacement of digital devices and associated components have an impact on the environment



Key Stage 2

In Key Stage 2, digital technology evolves into the study of interactivity and system logic. This stage focuses on the abstraction of information, where pupils understand how data is structured using fields, records and logical operators. It emphasises an iterative design cycle: pupils plan, prototype and refine artifacts to meet specific criteria, whether through 3-D modelling, simulations, website or app design.

Robotics demonstrate how programmes manipulate the physical world via sensors. As pupils explore the digital world, they develop understanding of information integrity, mastering search queries and AI prompts. They apply these skills to plan tasks using collaborative workspaces to organise information and solve logistical problems. Pupils learn that the internet is a global network of devices and that the World Wide Web is a service that runs on it.

By managing their digital footprint and practising sustainable behaviours, pupils develop a mature perspective on the environmental impact of technology, ensuring the digital worlds they build are inclusive, secure and purposeful.

Computing and digital systems

Pupils should learn that:

- effective digital solutions are developed through a cycle of design and evaluation, where projects are built to meet a specification and tested against success criteria
- abstraction reduces complexity by directing attention to the essential features of a system
- algorithms are refined using sequence, selection and iteration through block-based and text-based coding environments
- verification and testing are structured approaches to identify errors when developing algorithms and code
- a robotic system (e.g. microcontrollers or robots) uses input sensors to detect changes in its environment and processes the data using programmed logic to solve a practical problem
- organising data (fields, records, rows and columns) allows information to be searched and filtered accurately using logical operators (AND, OR, NOT)
- software is the set of instructions required to make hardware function

- digital work can be stored on a remote computer (e.g. a school server or in the cloud) and shared with specific people by controlling who can access it
- the internet is a global network of interconnected devices that transmits data using agreed rules (protocols) and the World Wide Web is a service that runs on the internet

Digital creation and communication

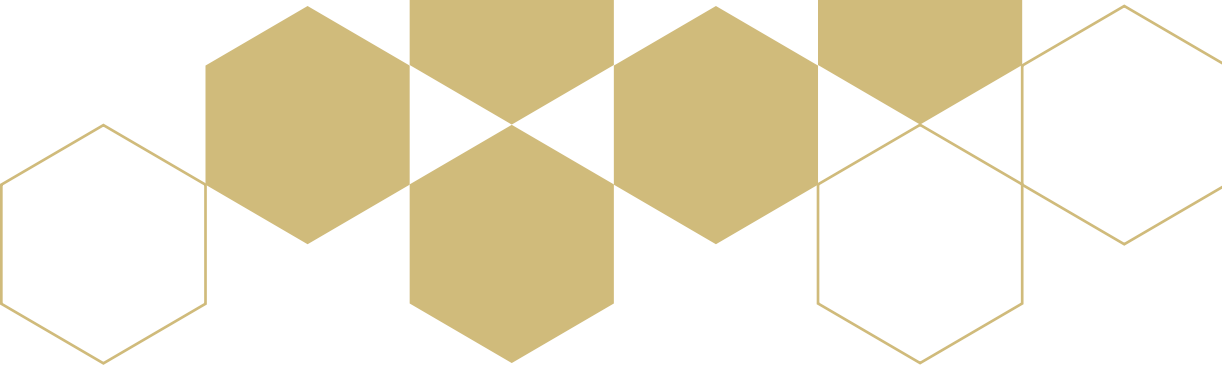
Pupils should learn:

- to organise and enhance digital content for a specific purpose and audience using features of word processing tools, including alignment, font styles and list structures
- to use presentation software to organise digital content into ordered slides, combining text, images and other media to communicate information to an audience
- that digital products and assets are evaluated and refined through an iterative design process (plan, create, test, improve) to ensure the final product is functional and intuitively designed
- that AI tools generate outputs based on the prompts they are given, and that refining prompts with clear language and detail can influence the quality of the results
- that digital assets are stored in specific file formats (optimised for documents, images, audio or video) and that choosing the correct format and location for a specific purpose ensures the data remains accessible and functional
- that secure online platforms provide moderated spaces where users can communicate and use tools (e.g. editing and commenting) to collaborate and develop shared documents

Digital ethics and responsibility

Pupils should learn:

- that a digital footprint is a persistent, growing record of personal online activity and data
- to recognise the importance of data privacy in protecting personal identity
- that games, websites, apps, and social media platforms have age restrictions, and that these are designed to protect users from content or interactions that may be inappropriate for their age
- about sustainable digital behaviours, including: managing files efficiently, using shared folders, logging out, shutting down devices, and adopting energy-saving practices to reduce environmental impact



Key Stage 3

In Key Stage 3, pupils transition to becoming more familiar with real-world uses of digital technology. They learn the logic behind how the internet sends data securely and how computers process information using more complex code. At Key Stage 3, independence develops, as pupils begin to use professional, text-based languages and authentic design environments to solve real-world problems.

A central pillar of this stage is engineering solutions for meaningful real-world challenges. Pupils use modelling and simulations to test ideas before they build them in real life. They don't just ask 'does it work?', they ask 'who does it work for?'. By understanding accessibility and user experience, they ensure their designs are easy for everyone to use. Pupils also look at the bigger picture including the ethics of technology. They critically analyse how emerging technologies, such as AI and social media, influence society and personal privacy.

Computing and digital systems

Pupils should learn:

- that software development follows structured cycles of planning, development, testing and refinement, and that different development approaches organise these stages differently
- about the application of hierarchy, patterns and syntax in a markup language
- about the use of functions and parameters in improving programme efficiency when using text-based code
- that programming languages use data types (e.g. integer, string, Boolean, float) to define how values are stored and processed
- about simple data structures such as arrays and lists and how to implement them in code
- about the benefits and limitations of using generative AI to create code and the need for review and verification
- that a model is a simplified representation of a real-world system and that changing variables in a model produces different outcomes; simulations use models to test predictions
- how to use criteria to extract specific insights from databases

- that computers process information using the binary numbers (using only 0 and 1 to represent data)
- that a computer's performance is related to its memory capacity and processing power
- that an operating system is the core software managing the computer's resources, and its role in managing processing power, peripheral devices, files, and system security
- about the different types of network transmission media and their application (e.g. fibre and wireless)
- that AI models work by identifying patterns from large amounts of data and then using those learned patterns to make predictions and generate content

Digital creation and communication

Pupils should learn:

- to analyse user needs and apply user-centred design principles when creating digital products (e.g. apps, websites and games)
- to use processes of refinement and evolution to improve usability and the user experience of a digital product that they have developed
- about the role of user stories in planning for an effective outcome that meets user need
- to apply abstraction in order to reduce complexity when developing digital solutions
- that digital communication follows protocols to suit a specified audience
- that digital platforms facilitate collaborative working through synchronous tools (e.g. real-time chat) and asynchronous tools (e.g. shared folders and online workspaces)

Digital ethics and responsibility

Pupils should learn:

- that generative AI can produce realistic text, images, audio and video that is difficult to distinguish from authentic or human-created content and that this capability can be used productively or harmfully to influence beliefs and behaviour
- that encryption underpins secure communication on the internet (e.g. HTTPS) and is integral to network cybersecurity practices
- about the concepts of copyright, ownership and intellectual property and how to credit sources appropriately

- about the legal and ethical implications of digital content use, sharing and licensing (e.g. GDPR and copyright)
- about accessibility guidelines and responsibilities when creating digital systems (e.g. the application of international standards for digital accessibility)
- about the environmental costs of cloud services and AI including carbon emissions, water use and energy consumption





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