

Skills Progression – September 2023

Computing and Online Safety

Intent

In line with the National Curriculum (2014) and the Education for a Connection World (2020) framework we aim to **equip** pupils to have the **confidence and skills** to use digital tools and technologies to **enhance** their learning and to **appreciate** the possibilities available to them to **connect** with a rapidly changing digital world at a level suitable **for the future** workplace and as active participants.

Our broad Computing curriculum encompasses **computer science, information technology** and **digital literacy** to **inspire** and **enable** our pupils to experience technology positively, responsibly and safely. Pupils are encouraged to use computational thinking and **creativity** through computer science and to apply the computing and IT skills they experience to **enrich learning** across all other areas of the curriculum.

We seek to ensure that our children are **furnished** with the skills to enable them to become **responsible, competent, confident** and **creative** users of information and communication technology.

Implementation

Our Computing and Online Safety curriculum has been created to provide a comprehensive progression document to guide the teaching and exploration of all areas of the curriculum. The curriculum has been designed as a **spiral curriculum** to allow pupils to revisit areas of learning and build upon previous knowledge and to **progressively** build their **understanding, respect** and **resilience** for technology. The curriculum falls under three areas:

IT – Information Technology	CS – Computer Science	DL – Digital Literacy
Having the skills to create, manipulate, store and retrieve digital content. Selecting the right software to accomplish given goals.	Understanding how computers and computer systems work.	Using technology safely and responsibly. Understanding opportunities technology offers for communication and collaboration. Evaluating digital content.
Word Processing / Typing Data Handling Presentations and Web Design Animation Media Creation (Video, Photography and Digital Art). Augmented Reality and Virtual Reality Sound	Computational Thinking Programming Computer Networks	Self-Image and Identity Online Relationships Online Reputation Online Bullying Managing Online Information Health, Wellbeing and Lifestyle Privacy and Security Copyright and Ownership Impact of Technology Research

Online Safety is taught and explored as part of the **Digital Literacy** area of the **Computing** curriculum as well as within the **PSHE** curriculum so that pupils are taught not only the **safe** and **responsible** use of technology but also the **social** and **emotional impact** of technology.

Year Groups are timetabled one lesson per week for Computing (CS) and one lesson every two weeks to cover the (IT) and (DL – non OLS) areas of the curriculum. **Online Safety** is taught in the first week of every half term and revisited if necessary at other times in the year as required. Many of the (IT) and (DL) areas of the curriculum will be **explored** as part of a **cross-curricular** provision – for example: Using Excel to graph Science results or using the Internet to research Topic areas.

Differentiation in Computing means providing for each pupil's individual needs by the various ways support is offered and final outcomes are achieved. Depending on the topic, some differentiation is planned into the lesson and some will occur as more support is required or outcomes are amended during the lesson. All pupils are given the opportunities to excel.

Outcomes are saved to each pupil's network storage area or (in the case of Online Safety projects into their PSHE books) and, over their Primary School career, will provide a record of their projects and achievements.

Impact

Pupils are encouraged to **enjoy** and **value** the Computing curriculum we deliver. They are asked the **WHY** behind their **exploration** and **learning** and not just the **HOW**. Pupils are encouraged to **discuss, reflect, revisit** and **appreciate** the **impact** technology has, and will have, on their **learning, development** and **well-being**.

We encourage and support pupils to find **balance** with technology as the key to an **effective** education and a **healthy life-style**. Pupils are supported to realise the National Curriculum and Education for a Connective World end of keystage expectations but also to develop **resilience** and **understanding** to support them to build on into their next stage of education and beyond. We encourage regular discussions between staff, pupils and parents to best embed and understand this. Pupils are encouraged to **showcase, share, celebrate** and **publish** their work to best show the **impact** of our curriculum and we will observe and record evidence of their achievements through each unit of the curriculum.

Skills Progression – Updated Sept 2023

National Curriculum in England

Purpose of study

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Aims

The national curriculum for computing aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology.

Attainment targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Computing – key stages 1 and 2

Subject content

Key stage 1

Pupils should be taught to:

- understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- create and debug simple programs
- use logical reasoning to predict the behaviour of simple programs

- use technology purposefully to create, organise, store, manipulate and retrieve digital content
- recognise common uses of information technology beyond school
- use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Key stage 2

Pupils should be taught to:

- design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration
- use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

National Curriculum Coverage – Key Stage 1 Computing Curriculum											
	1.1 Technology around us	1.2 Digital painting	1.3 Moving a robot	1.4 Grouping data	1.5 Digital writing	1.6 Programming animations	2.1 Information technology around us	2.2 Digital photography	2.3 Robot algorithms	2.4 Pictograms	2.5 Making music
Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions			✓			✓			✓		✓
Create and debug simple programs			✓			✓			✓		✓
Use logical reasoning to predict the behaviour of simple programs			✓			✓			✓		✓
Use technology purposefully to create, organise, store, manipulate and retrieve digital content	✓	✓		✓	✓	✓	✓	✓		✓	✓
Recognise common uses of information technology beyond school	✓		✓	✓			✓	✓			
Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	✓				✓	✓	✓			✓	

National Curriculum Coverage – Years 3 and 4	3.1 Connecting computers	3.2 Stop-frame animation	3.3 Sequencing sounds	3.4 Branching databases	3.5 Desktop publishing	3.6 Events and actions in programs	4.1 The Internet	4.2 Audio editing	4.3 Repetition in shapes	4.4 Data logging	4.5 Photo editing	4.6 Repetition in games
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts			✓			✓			✓			✓
Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	✓		✓			✓			✓	✓		✓
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs			✓			✓			✓			✓
Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration	✓						✓					
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content					✓		✓	✓			✓	
Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact							✓	✓			✓	

National Curriculum Coverage – Years 5 and 6											
	5.1 Sharing information	5.2 Video editing	5.3 Selection in physical computing	5.4 Flat-file databases	5.5 Vector drawing	5.6 Selection in quizzes	6.1 Internet communication	6.2 Webpage creation	6.3 Variables in games	6.4 Introduction to spreadsheets	6.5 3D modelling
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	✓		✓			✓	✓		✓		✓
Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	✓		✓			✓			✓		✓
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs			✓			✓			✓		✓
Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration	✓						✓				
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content		✓		✓			✓	✓			
Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	✓	✓						✓	✓		✓

Curriculum Map (progression of skills) – Computing

In order to gain expected for each year group, children should be able to demonstrate confidence in the following skills:

Year	Information Technology	Computer Science	Digital Literacy
R	<p>Can move the mouse with some control to point and click.</p> <p>Can use the mouse to click and drag.</p> <p>Can right click using the mouse and use the mouse pad on a laptop.</p> <p>Can use a paint package to draw a picture using a range of devices.</p> <p>Can explore saving work to a folder (with support).</p> <p>Can use simple tools in a paint package (eg. Brushes, colours).</p> <p>Can find the letters in their name on a computer keyboard or screen keyboard.</p>	<p>Can use everyday technology devices (eg laptop, voice recorder, simple camera, touch screen) to support development of digital literacy skills.</p> <p>Can explore on-screen activities (clicking – cause and effect).</p> <p>Can use IT hardware to interact with age appropriate software.</p> <p>Can create media content (eg. Audio recording, video recording, photographs, screen shots).</p> <p>Can use simple IT devices to support the creation or illustration of stories.</p> <p>Can complete a simple program on an electronic device (eg. BeeBot).</p> <p>Can use trial and error to adapt a simple program on an electronic device.</p>	<p>Can begin to use the internet, with adult supervision, to find and retrieve information of interest to them.</p> <p>Can identify devices that can be used to access information on the internet.</p> <p>Can recognise some ways that the internet can be used to communicate.</p> <p>Can discuss and identify rules that help keep people safe and healthy in and beyond the home when using technology.</p> <p>Can identify simple examples of personal information (eg. Name, address, birthday and age).</p>
1	<p>Can use a computer to paint a picture.</p> <p>Can recognise that tools can be changed to produce different outcomes.</p> <p>Can use a wider variety of tools to create images (i.e. changing brush sizes, fill tool, shape draw, line draw, undo)</p> <p>Can choose options to achieve a desired effect</p> <p>Can consider the impact of choices made.</p>	<p>Can choose a series of commands that can be run as a program.</p> <p>Can run a program on a device.</p> <p>Can use trial and error to produce an accurate set of simple instructions to control a floor 'robot' or on-screen object.</p> <p>Can name some digital devices that need precise instructions (algorithms) to work / be controlled.</p>	<p>Can explain why rules are needed when using technology.</p> <p>Can talk about key online safety 'rules' and knows where to go to report a problem or ask for help.</p> <p>Can find some straight-forward information from a 'safe', selected online resource.</p>

	<p>Can recognise that a keyboard is used to enter text onto a computer.</p> <p>Can collect simple data and enter it into a computer.</p> <p>Can access a resource and then find answers to straight-forward questions.</p> <p>Can use a mouse, finger etc. to select and move items on the screen, assembling or matching objects.</p> <p>Can take a digital picture or video clip or record a sound, as part of a task.</p> <p>Can use some software to create/assemble digital contents for clear purpose (eg. Text, images, animation, graph, sound etc.)</p> <p>Can make straight-forward edits of their digital work (text, image, paint, sound etc.) using simple editing tools, to both correct or improve it.</p> <p>Can recognise and talk about some common uses of technology in the world around them.</p>	<p>Can understand that software may represent a fantasy situation and can make sensible (logical) decisions/choices when 'playing' a simple game.</p> <p>Can identify the main parts of a computer.</p> <p>Can choose a piece of technology to do a job.</p> <p>Can recognise some basic computing terms and concepts such as: algorithm, program, sequence, control.</p>	
2	<p>Can use some software to create / assemble digital content for clear purpose, (text, images, animation, graphs, sound etc.)</p> <p>Can make straight-forward edits of their own digital work (text, image, sound etc.) using simple editing tools, to both correct or improve it.</p> <p>Can navigate their way within some straight-forward digital content, such as selected history content, to find some specific information.</p>	<p>Can give a set of simple instructions to program (control) a device such as a floor 'robot' or on-screen object.</p> <p>Can use trial and error to produce an accurate set of 'instructions' (algorithm) to control a floor 'robot' or on-screen object and is beginning to understand what is meant by 'debugging' to refine and improve / change their algorithm.</p> <p>Can talk about some electronic devices and understands that they need precise</p>	<p>Can talk about key online safety 'rules' and knows where to go /to report if they have a problem.</p> <p>Can create and share some information online, (such as in the class Team or on the class page or blog) and understand the need to be respectful and safe.</p> <p>Can find some straight-forward information from (selected) website resource(s) and knows not all websites are 'good to use'.</p>

	<p>Can create and amend a (multi-media) resource for a clear purpose, starting to show a sense of 'audience'.</p> <p>Can create and store some data (simple data file), and then find answers to straight-forward questions (pictograms / graphs etc.)</p> <p>Can recognise and talk about some common uses of technology in the world around them.</p> <p>Can save and retrieve work.</p>	<p>instructions (algorithms) to work / be programmed (controlled).</p> <p>Can begin to use logical 'trial and error' when using a computer simulation or game, and is able to discuss and predict the consequences of decisions/choices made.</p> <p>Can understand some basic computing terms and concepts, such as: network, algorithm, program, debug, editing, website, etc.</p>	
3	<p>Can use some software to create / assemble digital content for clear purpose, (text, images, animation, graphs, sound etc.)</p> <p>Can make straight-forward edits of their digital work (text, image, sound etc.,) using simple editing tools, to both correct and improve it.</p> <p>Can create and amend a (multi-media) resource that shows a sense of 'audience'.</p> <p>Can navigate their way within some straight-forward digital content, such as selected history content, to find some specific information.</p> <p>Can create and store some data, (simple data file, excel etc.) and then find answers to straight-forward questions.</p> <p>Can recognise and talk about some common uses of technology in the world around them.</p> <p>Can save and retrieve work from electronic folders and Teams pages.</p>	<p>Demonstrates logical 'trial and error' when using a computer simulation, 'model' or game, and predicts some consequences of decisions/choices made.</p> <p>Can produce an accurate set of simple instructions (code), to program (control) an on-screen object (or floor 'robot'), using trial and error to debut.</p> <p>Can also talk about how the sequence of events in some simple instructions (algorithms) or code are 'working'.</p> <p>Can talk about some digital devices beyond school, that need precise instructions (algorithms) to work / be programmed (controlled).</p> <p>Knows some relevant computing terms such as computer network, internet, algorithm, program, World Wide Web, website, etc.</p>	<p>Can talk about key online safety 'rules' and knows where to go /to report if they have a problem.</p> <p>Can create and share some information online (such as on Teams, class page or closed blog), understanding the need to be respectful and safe.</p> <p>Can find some straight-forward information from (selected) website resource(s) and knows not all websites 'good to use'.</p>

<p>4</p>	<p>Can use some software to create and combine digital content for clear purpose, (text, images, animation, graphs, podcasts, sound etc.) Can also edit and amend their digital work (text, image, sound etc.,) using simple editing tools, to both correct and improve it. Can create and amend a multi-media resource that shows a sense of 'audience'. Can navigate their way within a range of (selected) online content, to find specific information. Can include some information / content from an online resource within a 'presentation'. Can use a data file to find answers to straight-forward questions, (such as through data logging or a survey or a prepared database or a simple spreadsheet etc.). Can save and retrieve work from electronic folders and Teams. Can save and retrieve work from selected controlled online cloud environments such as Teams. Can begin to complete a selection of homework via the class pages on teams and understand how to save and retrieve their work.</p>	<p>Can demonstrate logical choices and prediction when using a computer simulation, 'model' or game and can make simple edits to solve a problem. Can produce, debug and edit an accurate sequence of instructions (using repeat) to control on-screen objects. Can plan and create a program using decomposition; includes the use of selection (IF / ELSE) and/or variables. Can talk about different types of input options (e.g. motion / touch, microphone, data logging sensor etc.) and output options (e.g. a switch, speakers, screen etc.). Can develop and use a wider computing 'vocabulary' relevant to their work such as 'debug', apps, data logging, search engine, spam, Wiki, etc.</p>	<p>Can talk about key online safety 'rules' and knows where to go /to report if they have a problem. Can create and share some information online (such as on Teams, class page, posts page or closed blog), understanding the need to be respectful and safe. Can find some straight-forward information from (selected) website resource(s) and knows that sites can contain true or false facts or opinions.</p>
<p>5</p>	<p>Can use software effectively to create, design and manipulate for purposeful outcomes, such as DT, art, English, maths, science or music projects.</p>	<p>Can test, debug and edit a program that accomplishes a given goal (i.e. a simple computer 'game' or model or simulation) to solve a problem.</p>	<p>Can talk about key online safety 'rules', knows what may be unacceptable behaviour, and knows where to go /to report if they have a problem.</p>

	<p>Can combine resources from different sources into a digital presentation, showing clear sense of intended purpose and 'audience'.</p> <p>Can find specific and valid information (i.e. be discerning) using sensible key words / search terms, from (selected) online web content, as fits the task.</p> <p>Can collect, analyse and draw conclusions from data (such as data logging or surveys or a prepared database or through manipulating spreadsheet, etc)</p> <p>Can save and retrieve work from various electronic folders on the LAN (local area network).</p> <p>Can save and retrieve work from selected controlled online cloud environments such as Teams.</p> <p>Can complete the majority of homework via the class pages on teams and understand how to save and retrieve their work.</p>	<p>Can create an accurate program to accomplish a given goal, including the use of repetition (loops), selection (IF/ELSE) and variables.</p> <p>Can use logical reasoning to deconstruct programs, evaluate their effectiveness and make them more challenging and / or elegant / efficient.</p> <p>Can use different types of input options and output options such as through sensing and control 'kits' and/or software, to solve a problem.</p> <p>Can understand basic computer networks (local (LAN), internet services and WWW).</p> <p>Can developing and use a wider computing vocabulary in context of the task, such as search engine, URL, variable, validate, digital footprint, spam, Wiki, etc.</p>	<p>Can demonstrate 'web-savvy' awareness, from a range of given scenarios, including conduct, contact and content 'risks' and issues.</p> <p>Can communicate and collaborate online (such as in Teams, Post pages, Collaboration Space or internal blogs) demonstrating respectful and safe behaviours.</p> <p>Understands some simple steps to 'validate' information found on the Web, and appreciates how search results are selected and ranked.</p>
6	<p>Can use software effectively to create, design and manipulate for purposeful outcomes, such as DT, art, English, maths, science or music projects.</p> <p>Can combine resources from different sources into a digital presentation, evaluate it, and show clearly intended purpose and 'audience'.</p> <p>Can be discerning and find valid information using sensible key words / search terms, from a range of online web content, as fits the task.</p>	<p>Can test, debug and edit a program that accomplishes a given goal (i.e. a simple computer 'game' or model or simulation) to solve a problem.</p> <p>Can create and develop a variety of programs, by planning, debugging and applying programming skills of repetition (loops), selection (IF/ELSE) and variables, to accomplish specific goals.</p> <p>Can use logical reasoning to deconstruct programs, evaluate their effectiveness and</p>	<p>Can demonstrate 'web-savvy' awareness, from a range of given scenarios, including conduct, contact and content 'risks' and issues.</p> <p>Can discuss range of online safety and eSecurity (privacy) issues and knows range of ways to report concerns or inappropriate behaviour.</p> <p>Can communicate and collaborate online (such as in Teams, Post pages, Collaboration Space or internal blogs) demonstrating respectful and safe behaviours.</p>

	<p>Can collect, analyse, evaluate and draw conclusions from data, such as through survey, database or spreadsheet, etc.</p> <p>Can save and retrieve work from various electronic folders on the LAN (local area network).</p> <p>Can save and retrieve work from selected controlled online cloud environments such as Teams.</p> <p>Can complete all homework via the class pages on teams and understand how to save and retrieve their work.</p>	<p>make them more challenging and / or elegant / efficient.</p> <p>Can use different types of input options and output options such as through sensing and control 'kits' and/or software, to solve a problem.</p> <p>Can understand basic computer networks (local (LAN), internet services and WWW).</p> <p>Can developing and use a wider computing vocabulary in context of the task, such as search engine, URL, HTML, https, variable, validate, digital footprint, etc.</p>	<p>Can check the results of web searches ie. How useful, relevant, reasonable, valid, accurate, and appreciates how search results are selected and ranked.</p>
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