



COMPUTING PROGRESSION

Level Expected at the End of EYFS

This should be viewed in coordination with Early Learning Goals associated with computing within EYFS learning.

Understanding the World (Technology)

Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.

Key Stage 1 National Curriculum Expectations	Key Stage 2 National Curriculum Expectations
<p>Pupils should be taught to:</p> <ul style="list-style-type: none">• 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.	<p>Pupils should be taught to:</p> <ul style="list-style-type: none">• 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.

This progression map works in conjunction with the whole school progression map that specifies key skills covered in each of the units of work in KS1/LKS2/UKS2

Intent

We feel that computing is an essential skill to an ever-changing technological age and is a major factor in enabling children to be confident, creative and independent learners. Our computing curriculum allows for a broad, deep understanding of computing and enables the children to find, explore, analyse, exchange and present information. The children will learn to apply the fundamental principles and concepts of computer science as well as developing analytical problem solving skills. They will also learn to evaluate and apply useful information technology skills across other areas of the curriculum. This will enable them to become responsible, competent, confident and creative users of information technology.

Implementation

The children have a regular computing lesson weekly (delivered by an experienced teaching assistant) but all classes also have access to technology to allow them to use their skills to support other areas of learning. Our plans and resources help children to build on their prior knowledge at the same time as introducing new skills and challenges. We have a clear and effective, scheme of work that is based on the National Centre for Computing Education (NCCE) which provides coverage in line with the national curriculum. Teaching and learning shows progression across all key stages within the strands of computer networks, creating media, daa and programming. Children will also learn about online safety. In KS1, the focus is on developing the use of basic algorithms, programming Beebots and learning how technology can be used safely and purposefully. In KS2, lessons still focus on algorithms, programming and coding but in a more complex way and for different purposes. Children also develop their knowledge of computer networks, internet services and the safe and purposeful use of the internet and technology. Digital leaders from upper key stage 2 help to improve computing across the school and in the past have helped to deliver online safety learning, tried and evaluated new hardware and software as well as helping the computing teacher to support the younger children with their learning.

Impact

Learning in computing will be enjoyed across the school. Children will use digital and technological vocabulary accurately, alongside a progression in their technical skills. They will be confident using a range of hardware and software and will produce high-quality purposeful products. Children will see the digital world as part of their world, extending beyond school, and understand that they have choices to make. They will be confident and respectful digital citizens going on to lead happy and healthy digital lives. Success will be assessed in a variety of ways including end of unit independent tasks that shows the learning they have achieved throughout the topics as well as practical assessments in key stage 1 (particularly in programming).

PROGRESSION ACROSS STRANDS

	Key Stage 1		Key Stage 2		
Class	Amber (R/1)	Sapphire(1/ 2)	Emerald (3/ 4)	Ruby (4/ 5)	Amethyst (5/ 6)
Computer networks	<p>Technology around us To identify technology To identify a computer and its main parts To use a mouse in different ways To use a keyboard to type To use the keyboard to edit text To create rules for using technology responsibly</p>	<p>Information technology around us To recognise the uses and features of information technology To identify information technology in the home To identify information technology beyond school To explain how information technology benefits us To show how to use information technology safely To recognise that choices are made when using information technology</p>	<p>Connecting computers (YEAR A) To explain how digital devices function To identify input and output devices To recognise how digital devices can change the way we work To explain how a computer network can be used to share information To explore how digital devices can be connected To recognise the physical components of a network</p> <p>The internet (YEAR B) To describe how networks physically connect to other networks To recognise how networked devices make up the internet To outline how websites can be shared via the World Wide Web To describe how content can be added and accessed on the World Wide Web To recognise how the content of the WWW is created by people To evaluate the consequences of unreliable content</p>	<p>Sharing information (YEAR A) To explain that computers can be connected together to form systems To recognise the role of computer systems in our lives To recognise how information is transferred over the internet To explain how sharing information online lets people in different places work together To contribute to a shared project online To evaluate different ways of working together online</p> <p>The internet (YEAR B) To describe how networks physically connect to other networks To recognise how networked devices make up the internet To outline how websites can be shared via the World Wide Web To describe how content can be added and accessed on the World Wide Web To recognise how the content of the WWW is created by people To evaluate the consequences of unreliable content</p>	<p>Communication (YEAR A) To identify how to use a search engine To describe how search engines select results To describe how search engines select results To explain how search results are ranked To recognise why the order of results is important, and to whom To recognise how we communicate using technology To evaluate different methods of online communication</p> <p>Sharing information (YEAR B) To explain that computers can be connected together to form systems To recognise the role of computer systems in our lives To recognise how information is transferred over the internet To explain how sharing information online lets people in different places work together To contribute to a shared project online To evaluate different ways of working together online</p>
Creating Media	<p>Digital painting To describe what different freehand tools do To use the shape tool and the line tools</p>	<p>Digital photography To know what devices can be used to take photographs</p>	<p>Desktop publishing (YEAR A) To recognise how text and images convey information To recognise that text and layout can be edited</p>	<p>Vector drawing (YEAR A) To identify that drawing tools can be used to produce different outcomes To create a vector drawing by combining shapes</p>	<p>3D modelling (YEAR A) To use a computer to create and manipulate three-dimensional (3D) digital objects</p>

	<p>To make careful choices when painting a digital picture To explain why I chose the tools I used To use a computer on my own to paint a picture To compare painting a picture on a computer and on paper</p> <p>Digital writing To use a computer to write To add and remove text on a computer To identify that the look of text can be changed on a computer To make careful choices when changing text To explain why I used the tools that I chose To compare writing on a computer with writing on paper</p>	<p>To use a digital device to take a photograph To describe what makes a good photograph To decide how photographs can be improved To use tools to change an image To recognise that images can be changed</p> <p>Making music To say how music can make us feel To identify that there are patterns in music To describe how music can be used in different ways To show how music is made from a series of notes To create music for a purpose To review and refine our computer work</p>	<p>To choose appropriate page settings To add content to a desktop publishing publication To consider how different layouts can suit different purposes To consider the benefits of desktop publishing</p> <p>Audio editing (YEAR A) To identify that sound can be digitally recorded To use a digital device to record sound To explain that a digital recording is stored as a file To explain that audio can be changed through editing To show that different types of audio can be combined and played together To evaluate editing choices made</p> <p>Photo editing (YEAR B) To explain that digital images can be changed To change the composition of an image To describe how images can be changed for different uses To make good choices when selecting different tools To recognise that not all images are real To evaluate how changes can improve an image</p> <p>Stop-frame animation (YEAR B) To explain that animation is a sequence of drawings or photographs To relate animated movement with a sequence of images To plan an animation To identify the need to work consistently and carefully</p>	<p>To use tools to achieve a desired effect To recognise that vector drawings consist of layers To group objects to make them easier to work with To evaluate my vector drawing</p> <p>Video editing (YEAR A) To recognise video as moving pictures, which can include audio To identify digital devices that can record video To capture video using a digital device To recognise the features of an effective video To identify that video can be improved through reshooting and editing To consider the impact of the choices made when making and sharing a video</p> <p>Web page creation (YEAR B) To review an existing website and consider its structure To plan the features of a web page To consider the ownership and use of images (copyright) To recognise the need to preview pages To outline the need for a navigation path To recognise the implications of linking to content owned by other people</p> <p>Stop-frame animation (YEAR B) To explain that animation is a sequence of drawings or photographs To relate animated movement with a sequence of images To plan an animation To identify the need to work consistently and carefully To review and improve an animation To evaluate the impact of adding other media to an animation</p>	<p>To compare working digitally with 2D and 3D graphics To construct a digital 3D model of a physical object To identify that physical objects can be broken down into a collection of 3D shapes</p> <p>Web page creation (YEAR A) To review an existing website and consider its structure To plan the features of a web page To consider the ownership and use of images (copyright) To recognise the need to preview pages To outline the need for a navigation path To recognise the implications of linking to content owned by other people</p>
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			<p>To review and improve an animation</p> <p>To evaluate the impact of adding other media to an animation</p>		
Data	<p>Grouping data</p> <p>To label objects</p> <p>To identify that objects can be counted</p> <p>To describe objects in different ways</p> <p>To count objects with the same properties</p> <p>To compare groups of objects</p> <p>To answer questions about groups of objects</p>	<p>Pictograms</p> <p>To recognise that we can count and compare objects using tally charts</p> <p>To recognise that objects can be represented as pictures</p> <p>To create a pictogram</p> <p>To select objects by attribute and make comparisons</p> <p>To recognise that people can be described by attributes</p> <p>To explain that we can present information using a computer</p>	<p>Branching databases (YEAR A)</p> <p>To create questions with yes/no answers</p> <p>To identify the object attributes needed to collect relevant data</p> <p>To create a branching database</p> <p>To identify objects using a branching database</p> <p>To explain why it is helpful for a database to be well structured</p> <p>To compare the information shown in a pictogram with a branching database</p> <p>Data logging (YEAR B)</p> <p>To explain that data gathered over time can be used to answer questions</p> <p>To use a digital device to collect data automatically</p> <p>To explain that a data logger collects 'data points' from sensors over time</p> <p>To use data collected over a long duration to find information</p> <p>To identify the data needed to answer questions</p> <p>To use collected data to answer questions</p>	<p>Flat-file databases (YEAR B)</p> <p>To use a form to record information</p> <p>To compare paper and computer-based databases</p> <p>To outline how grouping and then sorting data allows us to answer questions</p> <p>To explain that tools can be used to select specific data</p> <p>To explain that computer programs can be used to compare data visually</p> <p>To apply my knowledge of a database to ask and answer real-world questions</p>	<p>Spreadsheets (YEAR A&B)</p> <p>To identify questions which can be answered using data</p> <p>To explain that objects can be described using data</p> <p>To explain that formula can be used to produce calculated data</p> <p>To apply formulas to data, including duplicating</p> <p>To create a spreadsheet to plan an event</p> <p>To choose suitable ways to present data</p>
Programming	<p>Moving a robot</p> <p>To explain what a given command will do</p> <p>To act out a given word</p> <p>To combine forwards and backwards commands to make a sequence</p> <p>To combine four direction commands to make sequences</p> <p>To plan a simple program</p> <p>To find more than one solution to a problem</p>	<p>Robot algorithms</p> <p>To describe a series of instructions as a sequence</p> <p>To explain what happens when we change the order of instructions</p> <p>To use logical reasoning to predict the outcome of a program (series of commands)</p>	<p>Sequence in music (YEAR A)</p> <p>To explore a new programming environment</p> <p>I can identify that each sprite is controlled by the commands I choose</p> <p>To explain that a program has a start</p> <p>To recognise that a sequence of commands can have an order</p> <p>To change the appearance of my project</p>	<p>Repetition in games (YEAR A)</p> <p>To develop the use of count-controlled loops in a different programming environment</p> <p>To explain that in programming there are infinite loops and count controlled loops</p> <p>To develop a design which includes two or more loops which run at the same time</p> <p>To modify an infinite loop in a given program</p>	<p>Selection in games</p> <p>To explain how selection is used in computer programs</p> <p>To relate that a conditional statement connects a condition to an outcome</p> <p>To explain how selection directs the flow of a program</p> <p>To design a program which uses selection</p> <p>To create a program which uses selection</p> <p>To evaluate my program</p>

	<p>Introduction to animation To choose a command for a given purpose To show that a series of commands can be joined together To identify the effect of changing a value To explain that each sprite has its own instructions To design the parts of a project To use my algorithm to create a program</p>	<p>To explain that programming projects can have code and artwork To design an algorithm To create and debug a program that I have written</p> <p>Introduction to quizzes To explain that a sequence of commands has a start To explain that a sequence of commands has an outcome To create a program using a given design To change a given design To create a program using my own design</p>	<p>To create a project from a task description</p> <p>Events and actions (YEAR A) To explain how a sprite moves in an existing project To create a program to move a sprite in four directions To adapt a program to a new context To develop my program by adding features To identify and fix bugs in a program To design and create a maze-based challenge</p> <p>Repetition in shapes To identify that accuracy in programming is important To create a program in a text-based language To explain what 'repeat' means To modify a count-controlled loop to produce a given outcome To decompose a program into parts To create a program that uses count-controlled loops to produce a given outcome</p> <p>Repetition in games (YEAR B) To develop the use of count-controlled loops in a different programming environment To explain that in programming there are infinite loops and count controlled loops To develop a design which includes two or more loops which run at the same time To modify an infinite loop in a given program To design a project that includes repetition</p>	<p>To design a project that includes repetition To create a project that includes repetition</p> <p>Repetition in shapes (YEAR A) To identify that accuracy in programming is important To create a program in a text-based language To explain what 'repeat' means To modify a count-controlled loop to produce a given outcome To decompose a program into parts To create a program that uses count-controlled loops to produce a given outcome</p> <p>Selection in physical computing (YEAR A& B) <i>To control a simple circuit connected to a computer</i> <i>To write a program that includes count-controlled loops</i> <i>To explain that a loop can stop when a condition is met, eg number of times</i> <i>To conclude that a loop can be used to repeatedly check whether a condition has been met</i> <i>To design a physical project that includes selection</i> <i>To create a controllable system that includes selection</i></p> <p>Selection in games (YEAR B) To explain how selection is used in computer programs To relate that a conditional statement connects a condition to an outcome To explain how selection directs the flow of a program To design a program which uses selection To create a program which uses selection To evaluate my program</p>	<p>Variables in games To define a 'variable' as something that is changeable To explain why a variable is used in a program To choose how to improve a game by using variables To design a project that builds on a given example To use my design to create a project To evaluate my project</p> <p>Sensing (YEAR A) To create a program to run on a controllable device To explain that selection can control the flow of a program To update a variable with a user input To use an conditional statement to compare a variable to a value To design a project that uses inputs and outputs on a controllable device To develop a program to use inputs and outputs on a controllable device</p>
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			To create a project that includes repetition		
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