



Computing Curriculum
Year 1 and 2 – Cycle B

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.

EYFS – see also EYFS Curriculum

There are no statutory requirements to use and learn about technology in EYFS. However, at Caythorpe we believe technology can play a role in supporting early communication, language and literacy. It can offer new learning opportunities through ebooks, digital cameras, programmable toys, apps, computers with appropriate software, iPads and video calling. Thus, by the end of the year the pupils at Caythorpe have a range of technologies available to them within the nursery’s continuous provision which they can choose to use whenever they wish to for their own purposes. Whilst children are developing their understanding of these technologies, practitioners should be drawing their attention to the technology that’s being used in the world around them, from mobile phones to pedestrian crossings. Practitioners should also provide a positive role model by showing children that adults use technology for their own purposes and by talking to the children about the value they place on this use. In this way children will see technology used for real purposes and will develop the understanding that technologies are tools to be used when they’re needed and that they’re not used just for the sake of it. They will develop a positive disposition towards technology and a motivation to use it both now and in the future.

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. Schools are not required by law to teach the example content in [square brackets].

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.

	Autumn		Spring		Summer	
	Non-negotiables - C8: Participate in class social media accounts, C9: Understand online risks and the age rules for sites., C10: Use a range of applications and devices in order to communicate ideas, work and messages.					
		C4: Control when drawings appear and set the pen colour, size and shape.	C3: Select sounds and control when they are heard, their duration and volume	C11: Use simple databases to record information in areas across the curriculum.	C1: Control motion by specifying the number of steps to travel, direction and turn. C5: Specify user inputs (such as clicks) to control events.	C1: Control motion by specifying the number of steps to travel, direction and turn. C6: Specify the nature of events (such as a single event or a loop). C7: Create conditions for actions by waiting for a user input (such as responses to questions like: What is your name?).
Topic	Y1 Systems-and-networks-technology-around-us Y2 – Information Technology/networks	Creating Media – Digital Photography	Creating Media – Making Music	Pictograms	Programming A – Robot Algorithms	Programming B – Quizzes (initially recaps cycle A)
Resources	Laptops, iPads, paint program	Laptops, Ipads, digital camera, This unit uses screenshots from the website https://pixlr.com/x/ , but you could also use the Pixlr app if you’re using tablets.	Chrome music lab, song maker – or equivalent,	i2e pictogram tool or equivalent,	Beebots,	ScratchJnr
	Technology, computer, mouse, screen, keyboard, information technology, devices, app, program, click, drag, button, bar code, bank card,	Digital, photograph, photography, landscape, portrait, background, foreground, light, flash, image, object,	Rhythm, music, patterns, create, select, combine,	Compare, tally, record, table, more than, less than, data,	Sequence, algorithm, robot, command,	Block, green flag, program, sequence,
Lesson 1	Year 1: To identify technology Year 2: To recognise the uses and features of information technology Activities: Learners will become familiar with the term ‘technology’. They will classify what is and what is not technology in their school and/or classroom. Learners will demonstrate their understanding of how technology helps us in different ways. Y2s identify devices which are computers and consider how IT can help us both at school and at home. Outcomes: Year 1: I can explain technology as something that helps us I can locate examples of technology in the classroom I can explain how these technology examples help us Year 2: I can identify examples of computers I can describe some uses of computers I can identify that a computer is a part of information technology	Year 1/2: To use a digital device to take a photograph Activities: This lesson introduces the concept that many devices can be used to take photographs. In the lesson, learners begin to capture their own photographs. Outcomes: A photograph can be taken in either portrait or landscape format. In this lesson, learners explore taking photographs in both portrait and landscape formats and explore the reasons why a photographer may favour one over the other. Year 1: : I can recognise what devices can be used to take photographs I can talk about how to take a photograph Year 2: I can recognise what devices can be used to take photographs I can talk about how to take a photograph I can explain what I did to capture a digital photo	Year 1/2 To say how music can make us feel Activities: The learners will listen to and compare two pieces of music from <i>The Planets</i> by Gustav Holst. They will then use a musical description word bank to describe how this music generates emotions, i.e. how it makes them feel. Outcomes: Year 1: I can identify simple differences in pieces of music I can listen to a range of music (links to the Music curriculum) I can describe how music makes me feel, e.g. happy or sad Year 2: I can identify differences in pieces of music I can listen with concentration to a range of music (links to the Music curriculum) I can describe how music makes me feel, e.g. happy or sad	Year 1: To recognise that we can count objects using tally charts Year 2: To recognise that we can count and compare objects using tally charts Activities: During this lesson learners will begin to understand the importance of organising data effectively for counting and comparing. They will create their own tally charts to organise data, and represent the tally count as a total. Finally, they will answer questions comparing totals in tally charts using vocabulary such as ‘more than’ and ‘less than’. Outcomes: Year 1: I can record data in a tally chart I can represent a tally count as a total Year 2: I can record data in a tally chart I can represent a tally count as a total I can compare totals in a tally chart	Year 1/ 2: To describe a series of instructions as a sequence Activities: In this lesson, pupils will follow instructions given to them and give instructions to others. Pupils will consider the language used to give instructions and how that language needs to be clear and precise. Pupils will combine several instructions into a sequence that can then be issued to another pupil to complete. Pupils will then consider this clear and precise set of instructions in relation to an algorithm, and they will think about how computers can only follow clear and unambiguous instructions. Outcomes: Year 1: I can follow instructions given by someone else I can choose words that can be enacted as a sequence I can give clear instructions Year 2: I can follow instructions given by someone else I can choose a series of words that can be enacted as a sequence I can give clear and unambiguous instructions	Year 1/2: To explain that a sequence of commands has a start Activities: During this lesson, learners will recap what they know already about the ScratchJr app. They will begin to identify the start of sequences in real-world scenarios, and learn that sequences need to be started in ScratchJr. Learners will create programs and run them in full-screen mode using the Green flag . Outcomes: Year 1: I can identify the start of a sequence I can identify that a program needs to be started Year 2: I can identify the start of a sequence I can identify that a program needs to be started I can show how to run my program

Lesson 2	<p>Year 1: To identify a computer and its main parts</p> <p>Year 2: To identify information technology in the home</p> <p>Activities: Learners will get to know the main parts of a desktop or laptop computer. They will practise turning on and logging in to a computer. The learners will apply their knowledge of the different parts of a computer, to complete a mouse-based task.</p> <p>Y2 - consider common uses of information technology in a context that they are familiar with beyond school.</p> <p>Outcomes:</p> <p>Year 1: I can name the main parts of a computer</p> <p>I can switch on and log into a computer</p> <p>I can use a mouse to click and drag</p> <p>Year 2: I can explain the purpose of information technology in the home</p> <p>I can open a file</p> <p>I can move and resize images</p>	<p>Year 1/2 To make choices when taking a photograph</p> <p>Activities: A photograph can be taken in either portrait or landscape format. In this lesson, learners explore taking photographs in both portrait and landscape formats and explore the reasons why a photographer may favour one over the other.</p> <p>Outcomes:</p> <p>Year 1: I can take photos in both landscape and portrait format</p> <p>Year 2: I can explain the process of taking a good photograph</p> <p>I can take photos in both landscape and portrait format</p> <p>I can explain why a photo looks better in portrait or landscape format</p>	<p>Year 1/2: To identify that there are patterns in music</p> <p>Activities: In this lesson, learners will explore rhythm. They will create patterns and use those patterns as rhythms. They will use untuned percussion instruments and computers to hear the different rhythm patterns that they create.</p> <p>Outcomes:</p> <p>Year 1: I can create a rhythm pattern</p> <p>I can play an instrument following a rhythm pattern</p> <p>Year 2: I can create a rhythm pattern</p> <p>I can play an instrument following a rhythm pattern</p> <p>I can explain that music is created and played by humans</p>	<p>Year 1/2: To recognise that objects can be represented as pictures</p> <p>Activities: During this lesson learners will become familiar with the term ‘pictogram’. They will create pictograms manually and then progress to creating them using a computer. Learners will begin to understand the advantages of using computers rather than manual methods to create pictograms, and use this to answer simple questions.</p> <p>Outcomes:</p> <p>Year 1: I can enter data onto a computer</p> <p>Year 2: I can enter data onto a computer</p> <p>I can use a computer to view data in a different format</p> <p>I can use pictograms to answer simple questions about objects</p>	<p>Year 1/2: To explain what happens when we change the order of instructions</p> <p>Activities: This lesson focuses on sequences, and guides pupils to consider the importance of the order of instructions within a sequence. Pupils will create several short sequences using the same commands in different orders. They will then test these sequences to see how the different orders affect the outcome.</p> <p>Outcomes</p> <p>Year 1: I can use an algorithm to program a sequence on a floor robot</p> <p>Year 2: I can create different algorithms for a range of sequences (using the same commands)</p> <p>I can use an algorithm to program a sequence on a floor robot</p> <p>I can show the difference in outcomes between two sequences that consist of the same commands</p>	<p>Year 1/2: To explain that a sequence of commands has an outcome</p> <p>Activities: During this lesson, learners will discover that a sequence of commands has an ‘outcome’. They will predict the outcomes of real-life scenarios and a range of small programs in ScratchJr. Learners will then match programs that produce the same outcome when run, and use a set of blocks to create programs that produce different outcomes when run.</p> <p>Outcomes:</p> <p>Year 1: I can predict the outcome of a sequence of commands</p> <p>I can change the outcome of a sequence of commands</p> <p>Year 2: I can predict the outcome of a sequence of commands</p> <p>I can match two sequences with the same outcome</p> <p>I can change the outcome of a sequence of commands</p>
Lesson 3	<p>Year 1: To use a mouse in different ways</p> <p>Year 2: To identify information technology beyond school</p> <p>Activities: Learners will be building on the mouse skills they were introduced to in Lesson 2. Learners will review images of a computer to explain what each part does. They will develop an understanding that different computers use different mice, but they perform the same function. They will use the mouse to open a program and create a simple picture.</p> <p>Outcomes:</p> <p>Year 1: I can use a mouse to open a program</p> <p>I can click and drag to make objects on a screen</p> <p>I can use a mouse to create a picture</p> <p>Year 2:</p> <p>I can find examples of information technology</p> <p>I can talk about uses of information technology</p> <p>I can compare types of information technology</p>	<p>Year 1/2: To describe what makes a good photograph</p> <p>Activities: A photograph is composed by a photographer. In this lesson, learners discover what constitutes good photography composition and put this into practice by composing and capturing photos of their own.</p> <p>Outcomes:</p> <p>Year 1:I can talk about how to take a good photograph</p> <p>Year 2: I can identify what is wrong with a photograph</p> <p>I can discuss how to take a good photograph</p> <p>I can improve a photograph by retaking it</p>	<p>Year 1/2: To describe how music can be used in different ways</p> <p>Activities: In this lesson, learners will explore how music can be used in different ways to express emotions and to trigger their imaginations. They will experiment with the pitch and duration of notes to create their own piece of music, which they will then associate with a physical object — in this case, an animal.</p> <p>Outcomes:</p> <p>Year 1: I can use a computer to experiment with pitch and duration</p> <p>Year 2: I can connect images with sounds</p> <p>I can use a computer to experiment with pitch and duration</p> <p>I can relate an idea to a piece of music</p>	<p>Year 1/2: To create a pictogram (Y1 with support)</p> <p>Activities: During this lesson learners will think about the importance of effective data collection and will consider the benefits of different data collection methods: why, for example, we would use a pictogram to display the data collected. They will collect data to create a tally chart and use this to make a pictogram on a computer. Learners will explain what their finished pictogram shows by writing a range of statements to describe this.</p> <p>Outcomes:</p> <p>Year 1: I can organise data in a tally chart</p> <p>Year 2: I can organise data in a tally chart</p> <p>I can use a tally chart to create a pictogram</p> <p>I can explain what the pictogram shows</p>	<p>Year 1/ 2: To use logical reasoning to predict the outcome of a program (series of commands)</p> <p>Activities:: In this lesson, pupils will use logical reasoning to make predictions. They will follow a program step by step and identify what the outcome will be.</p> <p>Outcomes:</p> <p>Year 1: I can follow a sequence</p> <p>I can predict the outcome of a sequence</p> <p>Year 2: I can follow a sequence</p> <p>I can predict the outcome of a sequence</p> <p>I can compare my prediction to the program outcome</p>	<p>Year 1:To create a program</p> <p>Year 2: To create a program using a given design</p> <p>Activities: During this lesson, learners will be taught how to use the Start on tap and Go to page (Change background) blocks. They will use a predefined design to create an animation based on the seasons. Learners will then be introduced to the task for the next lesson. They will predict what a given algorithm might mean.</p> <p>Outcomes:</p> <p>Year 1: I can work out the actions of a sprite</p> <p>I can decide which blocks to use</p> <p>I can build the sequences of blocks</p> <p>I need</p> <p>Year 2: I can work out the actions of a sprite in an algorithm</p> <p>I can decide which blocks to use to meet the design</p> <p>I can build the sequences of blocks</p> <p>I need</p>

Lesson 4	<p>Year 1: To use a keyboard to type on a computer</p> <p>Year 2: To explain how information technology benefits us</p> <p>Activities: Learners will begin to use the computer keyboard for a purpose. They should understand that writing on a keyboard is called typing and will begin to demonstrate their ability to write their name. Learners will then save their work using the save icon and understand that this icon is used in lots of different programs. Y2 focus on the specific use of IT in a shop.</p> <p>Outcomes:</p> <p>Year 1: I can say what a keyboard is for I can type my name on a computer I can save my work to a file</p> <p>Year 2: I can demonstrate how information technology is used in a shop I can recognise that information technology can be connected I can explain how information technology helps people</p>	<p>Year 1/2: To decide how photographs can be improved</p> <p>Activities: This lesson introduces the concepts of light and focus as further important aspects of good photography composition. In this lesson, learners investigate the effect that good lighting has on the quality of the photos they take, and explore what effect using the camera flash and adding an artificial light source have on their photos. They also learn how the camera autofocus tool can be used to make an object in an image stand out.</p> <p>Outcomes:</p> <p>Year 1: I can explore the effect that light has on a photo</p> <p>Year 2: I can explore the effect that light has on a photo I can experiment with different light sources I can explain why a picture may be unclear</p>	<p>Year 1/ 2: To show how music is made from a series of notes</p> <p>Activities: In this lesson, learners will develop their understanding of music. They will use a computer to create and refine musical patterns.</p> <p>Outcomes:</p> <p>Year 1: I can identify that music is a sequence of notes I can use a computer to create a musical pattern using up to three notes</p> <p>Year 2: I can identify that music is a sequence of notes I can use a computer to create a musical pattern using three notes I can refine my musical pattern on a computer</p>	<p>Year 1: To select objects by attribute</p> <p>Year 2: To select objects by attribute and make comparisons</p> <p>Activities: During this lesson learners will think about ways in which objects can be grouped by attribute. They will then tally objects using a common attribute and present the data in the form of a pictogram. Learners will answer questions based on their pictograms using mathematical vocabulary such as ‘more than’/‘less than’ and ‘most’/‘least’.</p> <p>Outcomes:</p> <p>Year 1: I can tally objects using a common attribute</p> <p>Year 2: I can tally objects using a common attribute I can create a pictogram to arrange objects by an attribute I can answer ‘more than’/‘less than’ and ‘most/least’ questions about an attribute</p>	<p>Year 1/ 2: To explain that programming projects can have code and artwork</p> <p>Activities: In this lesson, pupils will design, create, and test a mat for a floor robot. This will introduce the idea that design in programming not only includes code and algorithms, but also artefacts related to the project, such as artwork and audio.</p> <p>Outcomes:</p> <p>Year 1: I can explain the choices I made for my mat design I can identify different routes around my mat I can test my mat</p> <p>Year 2: I can explain the choices I made for my mat design I can identify different routes around my mat I can test my mat to make sure that it is usable</p>	<p>Year ½ To change a given design</p> <p>Activities: During this lesson, learners will look at an existing quiz design and think about how this can be realised within the ScratchJr app. They will choose backgrounds and characters for their own quiz projects. Learners will modify a given design sheet and create their own quiz questions in ScratchJr.</p> <p>Outcomes:</p> <p>Year 1: I can choose backgrounds I can choose characters</p> <p>Year 2: I can choose backgrounds for the design I can choose characters for the design</p>
Lesson 5	<p>Year 1: To use the keyboard to edit text</p> <p>Year 2: To show how to use information technology safely</p> <p>Activities: Learners will begin by opening a file they have previously created. They will demonstrate their ability to use a keyboard to edit text, by writing a sentence and then deleting letters. They will also use the keyboard arrow keys to move the text cursor in their textbox. Y2 - learners will consider how they use different forms of information technology safely, in a range of different environments.</p> <p>Outcomes:</p> <p>Year 1: I can open my work from a file I can use the arrow keys to move the cursor I can delete letters</p> <p>Year 2: I can list different uses of information technology I can recognise how to use information technology responsibly I can say how those rules/guides can help me</p>	<p>Year 1/2 To use tools to change an image</p> <p>Activities:</p> <p>Outcomes: This lesson introduces the concept of simple image editing. Learners are introduced to the Pixlr image editing software and use the ‘Adjust’ tool to change the colour effect of an image.</p> <p>Year 1: I can recognise that images can be changed I can use a tool to make a change I can explain my choices</p> <p>Year 2: I can recognise that images can be changed I can use a tool to achieve a desired effect I can explain my choices</p>	<p>Year 1/2: To create music for a purpose</p> <p>Activities: In this lesson, learners will choose an animal and create a piece of music using the animal as inspiration. They will think about their animal moving and create a rhythm pattern from that. Once they have defined a rhythm, they will create a musical pattern (melody) to go with it.</p> <p>Outcomes:</p> <p>Year 1: I can describe an animal using sounds I can save my work</p> <p>Year 2: I can describe an animal using sounds I can explain my choices I can save my work</p>	<p>Year 1/2: To recognise that people can be described by attributes</p> <p>Activities: During this lesson learners will understand that people can be described by attributes. They will practise using attributes to describe images of people and the other learners in the class. The learners will collect data needed to organise people using attributes and create a pictogram to show this pictorially. Finally, learners will draw conclusions from their pictograms and share their findings.</p> <p>Outcomes:</p> <p>Year 1: I can choose a suitable attribute to compare people I can collect the data I need I can create a pictogram</p> <p>Year 2: I can choose a suitable attribute to compare people I can collect the data I need I can create a pictogram and draw conclusions from it</p>	<p>Year 1/2: To design an algorithm</p> <p>Activities: In this lesson, pupils will design algorithms to move their robot around the mats that they designed in Lesson 4. As part of the design process, pupils will outline what their task is by identifying the starting and finishing points of a route. This outlining will ensure that pupils clearly understand what they want their program to achieve.</p> <p>Outcomes:</p> <p>Year 1:: I can explain what my algorithm should achieve I can create an algorithm I can use my algorithm to create a program</p> <p>Year 2: I can explain what my algorithm should achieve I can create an algorithm to meet my goal I can use my algorithm to create a program</p>	<p>Year 1/2: To create a program using my own design</p> <p>Activities: During this lesson, learners will create their own quiz question designs including their own choices of question, artwork, and algorithms. They will increase the number of blocks used within their sequences to create more complex programs.</p> <p>Outcomes:</p> <p>Year 1: I can choose the images I can create an algorithm I can build sequences of blocks</p> <p>Year 2: I can choose the images for my own design I can create an algorithm I can build sequences of blocks to match my design</p>
Lesson 6	<p>Year 1: To create rules for using technology responsibly</p> <p>Year 2: To recognise that choices are made when using information technology</p> <p>Activities: Learners will be introduced to the concept of using computers safely, within the context of a school setting. They will explore why we have rules in school and how those</p>	<p>Year 1/2To recognise that photos can be changed</p> <p>Activities: This lesson introduces the concept that images can be changed for a purpose. Learners are introduced to a range of images that have been changed in different ways and through this, develop an awareness that not all images</p>	<p>Year 1/2: To review and refine our computer work</p> <p>Activities: In this lesson, learners will retrieve and review their work. They will spend time making improvements and then share their work with the class.</p> <p>Outcomes:</p>	<p>Year 1/2: I can use a computer program to present information in different ways</p> <p>Activities: To explain that we can present information using a computer</p> <p>Outcomes: During this lesson learners will understand that there</p>	<p>Year 1/2: To create and debug a program that I have written</p> <p>Activities: In this lesson, pupils will take on a larger programming task. They will break the task into chunks and create algorithms for each chunk. This process is known as ‘decomposition’ and is covered further in key stage 2. Pupils</p>	<p>Year 1/2: To decide how my project can be improved</p> <p>Activities: During this lesson, learners will compare their projects to their designs. They will think about how they could improve their designs by adding additional features. They will modify their</p>

	<p>rules help us, and then apply this understanding to rules needed for using computer technology safely.</p> <p>Outcomes:</p> <p>Year 1: I can identify rules to keep us safe and healthy when we are using technology in and beyond the home</p> <p>I can give examples of some of these rules</p> <p>I can discuss how we benefit from these rules</p> <p>Year 2:</p> <p>I can identify the choices that I make when using information technology</p> <p>I can explain simple guidance for using information technology in different environments and settings</p> <p>I can enjoy a variety of activities</p>	<p>they see are real. To start the lesson, learners are first challenged to take their best photograph by applying the photography composition skills that they have developed during the unit.</p> <p>Outcomes:</p> <p>Year 1: I can apply a range of photography skills to capture a photo</p> <p>I can recognise which photos have been changed</p> <p>I can identify which photos are real and which have been changed</p> <p>Year 2:I can apply a range of photography skills to capture a photo</p> <p>I can recognise which photos have been changed</p> <p>I can identify which photos are real and which have been changed</p>	<p>Year 1:: I can reopen my work</p> <p>I can explain how I made my work better</p> <p>I can listen to music and describe how it makes me feel</p> <p>Year 2: I can reopen my work</p> <p>I can explain how I made my work better</p> <p>I can listen to music and describe how it makes me feel</p>	<p>are other ways to present data than using tally charts and pictograms. They will use a pre-made tally chart to create a block diagram on their device. Learners will then share their data with a partner and discuss their findings. They will consider whether it is always OK to share data and when it is not OK. They will know that it is alright to say no if someone asks for their data, and how to report their concerns.</p> <p>Year 1: I can share what I have found out using a computer</p> <p>I can give an example of why information should not be shared</p> <p>Year 2: I can share what I have found out using a computer</p> <p>I can give simple examples of why information should not be shared</p>	<p>will also find and fix errors in their algorithms and programs. This is known as ‘debugging’.</p> <p>Outcomes:</p> <p>Year 1: I can plan algorithms</p> <p>I can test and debug each part of the program</p> <p>Year 2: I can plan algorithms for different parts of a task</p> <p>I can test and debug each part of the program</p> <p>I can put together the different parts of my program</p>	<p>designs and implement the changes on their devices. Learners will find and correct errors in programs (debug) and discuss whether they debugged errors in their own projects.</p> <p>Outcomes:</p> <p>Year 1: I can compare my project to my design</p> <p>I can add features</p> <p>I can begin to debug</p> <p>Year 2: I can compare my project to my design</p> <p>I can improve my project by adding features</p> <p>I can debug</p>
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	Technology Around Us	Creating Media – Digital Photography	Creating Media – Digital writing	Data Information – Grouping Data	Programming A – Moving a Robot	Programming B -
Progression	<p>As this is a Year 1 unit, no prior knowledge is assumed. This unit progresses students’ knowledge and understanding of technology and how they interact with it in school. Learners will build their knowledge of parts of a computer and develop the basic skills needed to effectively use a computer keyboard and mouse.</p> <p>Y2 - Learners should have an understanding of what technology is and where it is used in a school context. They should also be familiar with the technology available in their own school setting.</p> <p>Y2 - This unit progresses students’ knowledge and understanding of technology and how they interact with it beyond school. Learners will also build on their knowledge of using technology safely and responsibly, and begin to consider the implications of the choices that they make.</p>	<p>This unit begins the learners’ understanding of how photos are captured and can be manipulated for different purposes. Following this unit, learners will develop their photo editing skills in Year 4.</p>	<p>Learners should have experience of making choices on a tablet/computer, and they should be able to navigate within an application.</p> <p>Learners should also have some experience of patterns.</p>	<p>This unit progresses students’ knowledge and understanding of grouping data. It builds on the Year 1 Data and Information unit where learners labelled objects and grouped them based on different properties. In Year 3 learners develop their understanding of attributes (properties) using branching databases to structure data according to different object attributes.</p>	<p>In advance of the lessons in this Year 2 unit, pupils should have had some experience of creating short programs and predicting the outcome of a simple program. This unit progresses students’ knowledge and understanding of algorithms and how they are implemented as programs on digital devices. Pupils will spend time looking at how the order of commands affects outcomes. Pupils will use this knowledge and logical reasoning to trace programs and predict outcomes.</p>	<p>This unit progresses learners’ knowledge and understanding of instructions in sequences and the use of logical reasoning to predict outcomes.</p>
Curricular Links	<p>National curriculum computing links</p> <p>Y1 - Recognise common uses of information technology beyond school</p> <p>Use technology purposefully to create, organise, store, manipulate, and retrieve digital content</p> <p>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> <p>Education for a Connected World links</p> <p>Health, well-being and lifestyle</p> <p>I can identify rules that help keep us safe and healthy in and beyond the home when using technology</p> <p>I can give some simple examples</p> <p>Copyright and ownership</p> <p>I know that the work I create belongs to me</p> <p>I can name my work so that others know it belongs to me</p> <p>Y2 – As above –</p> <p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content</p>	<p>National curriculum computing links</p> <p>Computing</p> <p>Use technology purposefully to create, organise, store, manipulate, and retrieve digital content</p> <p>Recognise common uses of information technology beyond school</p> <p>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> <p>Further national curriculum links</p> <p>Art and design</p> <p>To develop a wide range of art and design techniques in using colour, pattern, texture, line, shape, form, and space</p> <p>Education for a Connected World links</p> <p>To identify that some images are not real (fake)</p>	<p>Computing national curriculum links</p> <p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content</p> <p>Music national curriculum links</p> <p>Play tuned and untuned instruments musically</p> <p>Listen with concentration and understanding to a range of high-quality live and recorded music</p> <p>Experiment with, create, select and combine sounds using the inter-related dimensions of music</p> <p>Education for a Connected World links</p> <p>Copyright and ownership</p> <p>I know that work I create belongs to me.</p>	<p>National curriculum computing links</p> <p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content</p> <p>Use technology safely and respectfully</p> <p>Education for a Connected World links</p> <p>Copyright and ownership</p> <p>I know that work I create belongs to me (Y1)</p> <p>I can name my work so that others know it belongs to me (Y1)</p>	<p>National curriculum links</p> <p>Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions.</p> <p>Create and debug simple programs</p> <p>Use logical reasoning to predict the behaviour of simple programs.</p> <p>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>	<p>National curriculum links</p> <p>Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions</p> <p>Create and debug simple programs</p> <p>Use logical reasoning to predict the behaviour of simple programs</p>

Assessment	Assessment opportunities are detailed in each lesson plan. The learning objective and success criteria are introduced in the slide deck at the beginning of each lesson and then reviewed at the end. Learners are invited to assess how well they feel they have met the learning objective using thumbs up, thumbs sideways, or thumbs down.	Formative assessment opportunities are provided throughout each of the lesson plan documents and the learning objectives and success criteria can be used to observe learners’ progress for summative assessment.	Assessment opportunities are detailed in each lesson plan. The learning objective and success criteria are introduced in the slide deck at the beginning of each lesson and then reviewed at the end. Learners are invited to assess how well they feel they have met the learning objective using thumbs up, thumbs sideways, or thumbs down.	Assessment opportunities are detailed in each lesson plan. The learning objective and success criteria are introduced in the slide deck at the beginning of each lesson and then reviewed at the end. Pupils are invited to assess how well they feel they have met the learning objective using thumbs up, thumbs sideways, or thumbs down.	Assessment opportunities are detailed in each lesson plan. The learning objective and success criteria are introduced in the slide deck at the beginning of each lesson and then reviewed at the end. Pupils are invited to assess how well they feel they have met the learning objective using thumbs up, thumbs sideways, or thumbs down.	Assessment opportunities are detailed in each lesson plan. The learning objective and success criteria are introduced in the slide deck at the beginning of each lesson and then reviewed at the end. Learners are invited to assess how well they feel they have met the learning objective using thumbs up, thumbs sideways, or thumbs down.
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Subject Knowledge	<p>Teachers need to know that the definition of technology is something that has been made with a specific purpose to help other people. Teachers should familiarise themselves with objects which are and are not examples of technology.</p> <p>Teachers will need to be aware that typing is the process of using a keyboard to write words, letters or numbers on a screen</p> <p>Y2</p> <p>Lesson 1: You should have a clear understanding of devices which can be described as information technology (IT). For younger learners, IT can be seen as computers, devices with computers inside, or things made to work with computers.</p> <p>Lesson 2: You should have a clear understanding of devices which can be described as IT. For younger learners, IT can be seen as computers, devices with computers inside, or things made to work with computers.</p> <p>Lesson 3: You will need to understand where technology can be found in shops and how it can be used. You should also know which devices can work together, for example:</p> <p>Barcode, barcode scanner, till</p> <p>Bank card, chip and PIN card reader, till</p> <p>Traffic light, crossing button, crossing signal</p> <p>Lesson 4: You can find some useful information and a short video about barcodes at</p> <p>www.waspbarcode.com/buzz/barcode</p> <p>Lesson 5: You should know your school’s rules regarding the safe use of technology and be familiar with</p> <p>Education for a Connected World.</p> <p>Lesson 6: You will need to be familiar with the Digital 5 a Day: www.childrenscommissioner.gov.uk/our-work/digital/5-a-day</p> <p>Enhance your subject knowledge to teach this unit through the following training opportunities:</p> <p>Online training courses</p> <p>Raspberry Pi online training courses</p> <p>Face-to-face courses</p> <p>NCCE face-to-face training courses</p>	<p>You should be familiar with the basic principles of photography, including composition, framing, lighting, and how to reduce blur.</p> <p>Lesson 5 uses an online photo editing tool, Pixlr, and knowledge of using photo editing software to apply filters to images is required to use this effectively; you should also be familiar with saving and downloading images.</p> <p>Enhance your subject knowledge to teach this unit with the following training opportunities:</p> <p>Online training courses</p> <p>Raspberry Pi Foundation online training courses</p> <p>Face-to-face courses</p> <p>National Centre for Computing Education face-to-face training courses</p>	<p>You should be familiar with <i>The Planets</i> by Gustav Holst:</p> <p>BBC Ten Pieces (includes video recordings of the suite and music/digital art lesson plan ideas): www.bbc.co.uk/programmes/articles/14ZjT5yjnKQRdKVsqrlZk1x/mars-from-the-planets-by-gustav-holst</p> <p>Gustav Holst’s ‘The Planets’: a guide – Classic FM: www.classicfm.com/composers/holst/pictures/holsts-planets-guide</p> <p>Learning to Listen: Gustav Holst’s ‘The Planets’ – YourClassical: www.yourclassical.org/story/2014/02/10/gustav-holst-the-planets-on-learning-to-listen</p> <p>You should also be familiar with musical terminology:</p> <p>BBC: www.bbc.co.uk/bitesize/subjects/zwxhfg8</p> <p>BBC Bitesize video (pulse and rhythm): www.bbc.co.uk/bitesize/clips/zmqn34j</p> <p>You should be familiar with Chrome Music Lab (musiclab.chromeexperiments.com/About), including:</p> <p>The Song Maker tool (musiclab.chromeexperiments.com/Song-Maker)</p> <p>Saving and opening work in Chrome Music Lab</p> <p>Enhance your subject knowledge to teach this unit through the following training opportunities:</p> <p>Online training courses</p> <p>Raspberry Pi Foundation online training courses</p> <p>Face-to-face courses</p> <p>National Centre for Computing Education face-to-face training courses</p>	<p>You will need to be aware that labelling, grouping, and searching are important aspects of data and information. Searching is a common operation in many applications, and requires an understanding that to search data, it must have labels. This unit of work focuses on assigning data (images) with different labels in order to demonstrate how computers are able to group and present data.</p> <p>You will also need to be familiar with the term ‘property’. A property is used to describe an object. For example, a ball will have a colour, which might be red; ‘colour’ is the property name, and ‘red’ is a specific property of the ball. Pupils will be introduced to the term ‘attribute’ in Year 2 – ‘Pictograms’. The terms ‘property’ and ‘attribute’ are interchangeable, however, ‘property’ has been used with younger pupils to make it more accessible.</p> <p>A key concept throughout this unit is the understanding that computers are not intelligent. Though they may seem like they are able to complete tasks autonomously, they are using input from humans, for example, searching for images that have been labelled by a human, or ‘counting’ data that has been grouped by humans.</p> <p>Throughout the unit, the term ‘object’ is used to describe anything that can be labelled with properties, eg animals, pencils, or trees. When talking about objects, they are named to make it easier for humans to know what other humans are talking about, eg ‘tree’. The name may change depending on context (sometimes ‘tree’ is enough, but sometimes ‘oak tree’ may be required), but it is always a property that an object can be labelled with. A label is a property used to describe an object, eg ‘green’. This is the data that is collected about the object.</p> <p>You will also need to be aware that a collection of data is called a ‘data set’.</p> <p>Enhance your subject knowledge to teach this unit through the following training opportunities:</p> <p>Online training courses</p> <p>Raspberry Pi Foundation online training courses</p> <p>Face-to-face courses</p> <p>National Centre for Computing Education face-to-face training courses</p>	<p>This unit focuses on developing pupils’ understanding of computer programming. It highlights that algorithms are a set of clear, precise, and ordered instructions, and that a computer program is the implementation of an algorithm on a digital device. The unit also introduces reading ‘code’ to predict what a program will do. Pupils will engage in aspects of program design, including outlining the project task and creating algorithms.</p> <p>When programming, there are four levels that can help describe a project, known as ‘levels of abstraction’.</p> <p>Research suggests that this structure can support pupils in understanding how to create a program and how it works:</p> <p>Task — what is needed</p> <p>Design — what it should do</p> <p>Code — how it is done</p> <p>Running the code — what it does</p> <p>Pupils will move between the different levels throughout the unit, and this is highlighted within each lesson plan.</p> <p>Enhance your subject knowledge to teach this unit through the following training opportunities:</p> <p>Online training courses</p> <p>Raspberry Pi Foundation online training courses</p> <p>Face-to-face courses</p> <p>National Centre for Computing Education face-to-face training courses</p>	<p>This unit focuses on developing learners’ understanding of computer programming. 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Research suggests that this structure can support learners in understanding how to create a program and how it works:</p> <p>Task – what is needed</p> <p>Design – what it should do</p> <p>Code – how it is done</p> <p>Running the code – what it does</p> <p>Spending time at the ‘task’ and ‘design’ levels before engaging in code-writing aids learners in assessing the achievability of their programs, and reduces a learner’s cognitive load during programming.</p> <p>Learners will move between the different levels throughout the unit, and this is highlighted within each lesson plan.</p> <p>Enhance your subject knowledge to teach this unit through the following training opportunities:</p> <p>Online training courses</p> <p>Raspberry Pi Foundation online training courses</p> <p>Face-to-face courses</p> <p>National Centre for Computing Education face-to-face training courses</p>