

# KO: Computing

## Critical Concepts

1. Pupils understand how to navigate menus
2. Pupils understand how to store, retrieve and share their work.

## Curriculum Threads

**Sense of community**    **Appreciation of difference**    **Environmental activism**    **Creativity and appreciation of beauty**

### Development Matters in the Early Years Foundation Stage (EYFS)

#### Understanding the world: Technology

##### **Birth-11 months – 8-20 months**

*The beginnings of understanding technology lie in babies exploring and making sense of objects and how they behave. See Characteristics of Effective Learning - Playing and Exploring and Creating and Thinking Critically*

##### **16-26 months**

- Anticipates repeated sounds, sights and actions, e.g. when an adult demonstrates an action toy several times.
- Shows interest in toys with buttons, flaps and simple mechanisms and begins to learn to operate them.

##### **22-36 months**

- Seeks to acquire basic skills in turning on and operating some ICT equipment.
- Operates mechanical toys, e.g. turns the knob on a wind-up toy or pulls back on a friction car.

##### **30-50 months**

- Knows how to operate simple equipment, e.g. turns on CD player and uses remote control.
- Shows an interest in technological toys with knobs or pulleys, or real objects such as cameras or mobile phones.
- Shows skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images.
- Knows that information can be retrieved from computers

##### **40-60 months**

- Completes a simple program on a computer.
- Uses ICT hardware to interact with age appropriate computer software.

##### **Early Learning Goal**

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

<i>purposes.</i>			
Topic	Disciplinary Knowledge:	Substantive Knowledge	Vocabulary
<p><b>(Y1/2- Year A)</b>  <b>1.1 We are treasure hunters</b>  <i>Using programmable toys</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.</li> <li>• Create and debug simple programs.</li> <li>• Use logical reasoning to predict the behaviour of simple programs.</li> <li>• Recognise common uses of information technology beyond school.</li> </ul>	<p><b>Curriculum Link:</b>            Geography: Children use geographical language, and could use and make their own maps.            Maths: Children recognise movements in a straight line (translations) and rotations, and combine them in simple ways. They start to recognise and make whole, half and quarter turns, and learn to recognise a right angle.            History: Children find out about the past.            PSHE: Children could consider the effect that pirates' actions had on others.            English: Children provide clear instructions for moving around a map.</p> <p><b>Unit progression:</b>            Unit 2.1 - We are astronauts            Unit 2.2 - We are games testers</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <u>key experiences</u>:- planning &amp; testing / trial and error.  <u>key reflection</u>:- How do instructions help us?</p> <p><b>Retrieval docs</b>            Self-assessment checklists and Stickers awards            Key Questions            How does hardware and software carry out commands?            How do I make a simple, working algorithm?</p> <p><b>Computing Knowledge:</b>            Understand that a programmable toy can be controlled by inputting a sequence of instructions. Develop and record sequences of instructions as an algorithm. Program the toy to follow their algorithm. Debug their programs. Predict how their programs will work.</p>	<p><b>Digital safety Vocabulary</b>  <b>Private</b> Something which must be kept to yourself, and not shared with anyone  <b>Personal Information</b> Information that is related to you- Name, Address, Post Code, Where you go to school  <b>True/False</b> Accurate or real information is True. Made up or wrong information is false  <b>Internet</b> Accessed by a device such as iPad or Computer, the internet holds lots of information, games, videos and files, and allows communication  <b>SMART acronym</b>  <b>S</b> - Stay Safe  <b>M</b> - Don't Meet up  <b>A</b> - Accepting Files  <b>R</b> - Reliable?  <b>T</b> - Tell someone</p> <p><b>Programming Vocabulary</b>  <b>Instructions</b> - A detailed order or directions  <b>Algorithm</b> - A set of rules or instructions that can be followed to achieve something.  <b>Predict</b> - To use your knowledge to say what you think will happen next.  <b>Sequence</b> - The steps that are followed in order.  <b>Handling Data Vocabulary</b>  <b>Data &amp; Information</b> - Facts proved or learned about something.  <b>Sort</b> - Arrange data to view it better.  <b>Present</b> - Showing someone in a formal way.  <b>Chart</b> - Information in the form of a table, graph or diagram.  <b>Graph</b> - Visual representation of information.</p>

<p>(Y1/2- Year A) 1.2 <b>We are TV chefs</b> <i>Filming the steps of a recipe</i></p>	<ul style="list-style-type: none"> <li>• Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.</li> <li>• Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</li> <li>• Recognise common uses of information technology beyond school.</li> <li>• Use logical reasoning to predict the behaviour of simple programs.</li> </ul>	<p><b>Curriculum Link:</b> English: Pupils develop their skills in spoken language by speaking audibly and fluently, and by participating in presentations. Art and design: Pupils illustrate the steps in their recipe on a simple storyboard. PSHE: Pupils are encouraged to make simple choices that improve their health and well-being. Maths: Pupils develop vocabulary for measures, e.g. quicker, slower, earlier, later. Science: Pupils have the opportunity to describe the simple physical properties of everyday materials.</p> <p><b>Unit progression:</b> Unit 1.1 - We are treasure hunters Unit 2.1 - We are astronauts Unit 3.1 - We are programmers</p> <p><b>Opportunities to explore spirituality/ thread:</b> <u>key experiences</u>:- Seeing myself on film. <u>key reflection</u>:- Capturing moments in time.</p> <p><b>Retrieval docs</b> Self-assessment checklists and Stickers awards Key Questions How do I plan an algorithm? How does a video camera work?</p> <p><b>Computing Knowledge:</b> Break down a process into simple, clear steps, as in an algorithm. Use different features of a video camera. Use a video camera to capture moving images. Develop collaboration skills. Discuss their work and think about how it could be improved.</p>	<p><b>Branching Database</b> - A way of grouping or sorting objects.</p> <p><b>Electronic Communication Vocabulary</b> <b>Email</b> - Electronic mail (or e-mail or email) is an Internet service that allows those people who have an e-mail address (accounts) to send and receive electronic letters. Those are much like postal letters, except that they are delivered much faster when sending over long distances, and are usually free. <b>Online</b> - Actions when connected to the internet. <b>Inappropriate</b> - Not suitable. <b>Minimise</b> - Hide the contents of the screen without removing it forever. <b>Back buttons</b> - Navigate back to a previous page. <b>Send</b> - The button to press to ensure the message gets to the person you want to send it to.</p> <p><b>Multimedia Vocabulary</b> <b>Mouse</b> - Used to point and click on objects on the screen. <b>Keyboard</b> - Used to type letters, numbers and characters on the screen. <b>Font</b> - The style of writing. <b>Paste</b> - Used after copying to add the same information again. <b>Save</b> - Allow your creations to be stored so you can use them again. <b>Open</b> - Retrieve your work that you have saved.</p> <p><b>Our Technology Vocabulary</b> <b>Computer</b> - A computer is a type of machine. It doesn't have a brain like us and it can't think or</p>
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<p><b>(Y1/2- Year A)</b>  <b>1.3</b>  <b>We are painters</b>  <i>Illustrating an eBook</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</li> <li>• Recognise common uses of information technology beyond school.</li> <li>• 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.</li> </ul>	<p><b>Curriculum Link:</b>  Art and design: Children explore how ICT can be used to create original images.  English: Children listen to and retell traditional tales, and may also write their own stories.  History: The children’s appreciation that traditional tales were written more than a hundred years ago will develop their chronological understanding</p> <p><b>Unit progression:</b>  Unit 1.5 - We are storytellers  Unit 1.6 - We are Celebrating</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <u>key experiences</u>:- Creating digital artwork.  <u>key reflection</u>:- What is beautiful?</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards  Key Questions  How do I use the web to find ideas safely?  How can I create and edit a digital image?</p> <p><b>Computing Knowledge:</b>  Use the web safely to find ideas for an illustration. Select and use appropriate painting tools to create and change images on the computer. Understand how this use of ICT differs from using paint and paper. Create an illustration for a particular purpose. Know how to save, retrieve and change their work. Reflect on their work and act on feedback received.</p>	<p>have ideas, but it can follow stored instructions and do lots of useful things.  <b>Network</b> - A network, in computing, is a group of two or more devices that can communicate.  <b>Wifi</b> - Connecting to other devices and the internet without a wire.  <b>Website</b> - A collection of pages that can be accessed for information.</p>
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<p><b>(Y1/2- Year A)</b>  <b>1.4</b>  <b>We are Collectors</b>  <i>Finding images using the web</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.</li> <li>• Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</li> <li>• 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.</li> <li>• Recognise common uses of information technology beyond school.</li> </ul>	<p><b>Curriculum Link:</b>  Science: Pupils consider the different ways in which animals can be grouped and sorted.  Maths: Pupils put objects into sets and order a collection of objects.  English: Pupils will need to use language effectively to search for animals and to describe how they're organising their pictures.  PSHE: Online safety should be integrated into a cross-curricular approach to safe and responsible use of technology</p> <p><b>Unit progression:</b>  Unit 2.4 - We are researchers  Unit 2.6 - We are zoologists</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <u>key experiences</u>:- Finding images of things we may never have seen with our own eyes.  <u>key reflection</u>:- Wonder of the internet - providing shared knowledge and experience.</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards  Key Questions  What are algorithms and why are they important?  What safety issues do we need to consider when using the internet?</p> <p><b>Computing Knowledge:</b>  Find and use pictures on the web. Know what to do if they encounter pictures that cause concern. Group images on the basis of a binary (yes/no) question. Organise images into more than two groups according to clear rules. Sort (order) images according to some criteria. Ask and answer binary (yes/no) questions about their images.</p>	
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<p><b>(Y1/2- Year A)</b>  <b>1.5 We are storytellers</b>  <i>Producing a talking book</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</li> <li>• Recognise common uses of information technology beyond school.</li> <li>• Use technology safely and respectfully.</li> </ul>	<p><b>Curriculum Link:</b>  The unit could be used to make a talking book about a topic in any curriculum area.  English: Children need to speak with clear diction and use appropriate intonation when reading and reciting text.  Music: Children use sounds expressively to illustrate a story.  PSHE: Children could consider how talking books improve the lives of people with particular disabilities.</p> <p><b>Unit progression:</b>  Unit 1.6 - We are celebrating  Unit 2.3 - We are photographers</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <u>key experiences</u>:- Immersing in and sharing stories.  <u>key reflection</u>:- The joy of storytelling.</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards  Key Questions  How is technology used in the wider world to create digital entertainment content?  What are the benefits of creating a talking book?</p> <p><b>Computing Knowledge:</b>  Use sound recording equipment to record sounds. Develop skills in saving and storing sounds on the computer. Develop collaboration skills as they work together in a group. Understand how a talking book differs from a paper-based book. Talk about and reflect on their use of ICT. Share recordings with an audience.</p>	
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<p><b>(Y1/2- Year A)</b>  <b>1.6 We are celebrating</b>  <i>Creating a card digitally</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</li> <li>• Recognise common uses of information technology beyond school.</li> <li>• 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.</li> </ul>	<p><b>Curriculum Link:</b>  English: Pupils assemble/develop ideas on-screen.  Art: Children select images to represent ideas and feelings.  Music: Children could consider how music and sound might improve their card.  PSHE: Children consider when people might receive or send a greetings card, and why these times are important to them.  RE: This unit could be linked to how and why religious celebrations are important.</p> <p><b>Unit progression:</b>  Unit 2.3 - We are photographers  Unit 3.1 - We are programmers</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <u>key experiences</u>:- Thinking about what images would make someone smile.  <u>key reflection</u>:- Special times in our lives.</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards  Key Questions  What are the benefits of creating greetings cards digitally?  What keeps me safe online?</p> <p><b>Computing Knowledge:</b>  Develop basic keyboard skills, through typing and formatting text. Develop basic mouse skills. Use the web to find and select images. Develop skills in storing and retrieving files. Develop skills in combining text and images. Discuss their work and think about whether it could be improved.</p>	
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<p><b>(Y1/2- Year B)</b></p>	<p>Have a clear understanding of the features of a chromebook. To sign in using email address and password</p>	<p>Introduction to chromebooks using touch pad signing in to account typing on the keyboard taking a screenshot</p>
<p><b>(Y1/2- Year B)</b> Autumn 2 <b>2.1 We are astronauts</b> <i>Programming on screen</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Have a clear understanding of algorithms as sequences of instructions.</li> <li>• Convert simple algorithms to programs.</li> <li>• Predict what a simple program will do.</li> <li>• Spot and fix (debug) errors in their programs.</li> </ul>	<p><b>Curriculum Link:</b> Maths: Children will learn about the properties of position, movement and turning. They will also develop their understanding of angles as a measure of turning, using whole turns, half-turns and quarter-turns. English: Children will have the opportunity to use language associated with giving instructions. Art and design: Children could design their own spaceships and space backgrounds. D&amp;T: Children could make a model spaceship.</p> <p><b>Unit progression:</b> Unit 2.2 - We are game testers Unit 3.1 - We are programmers</p> <p><b>Opportunities to explore spirituality/ thread:</b> <u>key experiences</u>:- Navigating a rocket through space. <u>key reflection</u>:- Awe and wonder - our solar system.</p> <p><b>Retrieval docs</b> Self-assessment checklists and Stickers awards Key Questions What is debugging and how is it done? Why is testing important when creating algorithms?</p> <p><b>Computing Knowledge:</b> Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous</p>



		<p>instructions. Create and debug simple programs. Use logical reasoning to predict the behaviour of simple programs. Adaptation (Oct 2022) Using Beebot online programme initially to familiarise with programming and debugging then using Scratch for story telling - 2 sprites talking to each other,</p>
<p><b>(Y1/2- Year B)</b> <b>2.2 We are games testers</b> <i>Exploring how computer games work</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.</li> <li>• Use logical reasoning to predict the behaviour of simple programs.</li> <li>• Recognise common uses of information technology beyond school.</li> <li>• Use technology safely and respectfully, keeping personal information private.</li> </ul>	<p><b>Curriculum Link:</b> English: Pupils' own explanations of how algorithms work will link with their work in English. Science: When testing their predictions, pupils are using a simple version of the scientific method</p> <p><b>Unit progression:</b> Unit 4.1 - We are software developers Unit 5.1 - We are game developers</p> <p><b>Opportunities to explore spirituality/ thread:</b> <u>key experiences</u>:- Playing games for pleasure &amp; learning. <u>key reflection</u>:- How technology brings us joy.</p> <p><b>Retrieval docs</b> Self-assessment checklists and Stickers awards Key Questions How are computer games made? What is a sprite?</p> <p><b>Computing Knowledge:</b> Describe carefully what happens in computer games. Use logical reasoning to make predictions of what a program will do. Test these predictions. Think critically about computer games and their use. Be aware of how to use games safely and in balance with other activities.</p>

<p><b>(Y1/2- Year B)</b>  <b>2.3 We are photographers</b>  <i>Taking better photos</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</li> <li>• Recognise common uses of information technology beyond school.</li> <li>• 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.</li> </ul>	<p><b>Curriculum Link:</b>  Ideally the theme for the photos should relate to a topic in another curriculum area.  Art and design: Children review digital photos and consider how to create effective images.  Maths: Some aspects of composition, such as the 'rule of thirds', and technical aspects of digital images, such as pixels and colour values, draw on mathematical understanding.</p> <p><b>Unit progression:</b>  Unit 2.6 - We are zoologists  Unit 4.6 - We are meteorologists</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <u>key experiences</u>:- Capturing images.  <u>key reflection</u>:- Saving a moment and making it beautiful.</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards  Key Questions  How can you adjust a photo before taking?  How can you adjust a photo after taking?</p> <p><b>Computing Knowledge:</b>  Consider the technical and artistic merits of photographs. Use a digital camera or camera app. Take digital photographs. Review and reject or rate the images they take. Edit and enhance their photographs. Select their best images to include in a shared portfolio.</p>
<p><b>(Y1/2- Year B)</b>  <i>Spring Term- 1</i></p> <p><b>2.4 We are researchers</b>  <i>Researching a topic</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</li> </ul>	<p><b>Curriculum Link:</b>  English: The children discuss and practise effective note taking.  History: This unit touches on the concept of reliability of evidence</p> <p><b>Unit progression:</b>  Unit 3.3 - We are presenters</p>

	<ul style="list-style-type: none"> <li>• Recognise common uses of information technology beyond school.</li> <li>• 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.</li> </ul>	<p>Unit 3.6 - We are opinion pollsters</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <u>key experiences</u>:- Using technology for discovery.  <u>key reflection</u>:- Knowledge at our fingertips.</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards  Key Questions  What is a search engine?  What keeps me safe online?</p> <p><b>Computing Knowledge:</b>  Develop collaboration skills through working as part of a group. Develop research skills through searching for information on the internet. Improve note-taking skills through the use of mind mapping. Develop presentation skills through creating and delivering a short multimedia presentation.</p>
<p><b>(Y1/2- Year B)</b>  <b>2.5 We are detectives</b>  <i>Collecting clues</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</li> <li>• Recognise common uses of information technology beyond school.</li> <li>• 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.</li> </ul>	<p><b>Curriculum Link:</b>  English: Children apply their spoken language skills when listening to a witness statement. They also apply skills in writing for different purposes, and proofreading to check for errors in spelling, grammar and punctuation.</p> <p><b>Unit progression:</b>  Unit 3.5 - We are communicators</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <u>key experiences</u>:- Using technology to record facts.  <u>key reflection</u>:- Why mysteries capture our interest.</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards  Key Questions</p>

		<p>What is an email and how is it used?          What do I need to remember to stay safe when communicating online?</p> <p><b>Computing Knowledge:</b>          Understand that email can be used to communicate. Develop skills in opening, composing and sending emails. Gain skills in opening and listening to audio files on the computer. Use appropriate language in emails. Develop skills in editing and formatting text in emails. Be aware of online safety issues when using email.</p>
<p><b>(Y1/2- Year B)</b>  <b>2.6 We are zoologists</b>  <i>Collecting data about bugs</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</li> <li>• Recognise common uses of information technology beyond school.</li> <li>• 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.</li> </ul>	<p><b>Curriculum Link:</b>          Science: The children learn to identify and name a variety of animals in their habitats.          Maths: This unit provides opportunities to record, interpret, collate, organise and compare information.          Geography: There are opportunities to introduce simple mapping and location skills, geographical vocabulary and fieldwork skills.</p> <p><b>Unit progression:</b>          Unit 3.6 - We are opinion pollsters          Unit 4.6 - We are meteorologists</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <u>key experiences:</u>- Sorting and classifying living things.  <u>key reflection:</u>- What makes each life unique?</p> <p><b>Retrieval docs</b>          Self-assessment checklists and Stickers awards          Key Questions          What are the different types of digital data?          How can you sort, group and present different data?</p> <p><b>Computing Knowledge:</b></p>

		<p>Sort and classify a group of items by answering questions. Collect data using tick charts or tally charts. Use simple charting software to produce pictograms and other basic charts. Take, edit and enhance photographs. Record information on a digital map.</p>	
<p><b>(Y3)</b>  <b>3.1 We are programmers</b>  <i>Programming an animation</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Design, write and debug programs that accomplish specific goals; solve problems by decomposing them into smaller parts.</li> <li>• Use sequence ... in programs; work with variables and various forms of input and output.</li> <li>• Use logical reasoning to detect and correct errors in algorithms and programs.</li> <li>• Select, use and combine a variety of software ... to design and create ... content that accomplish(es) given goals, including ... presenting ... information.</li> </ul>	<p><b>Curriculum Link:</b></p> <p>Art and design: The children could design characters and backgrounds using art and design techniques such as drawing, painting or sculpture.  English: This unit links to the study of character, dialogue and narrative.  Languages: The children could write or record dialogue for their character in a foreign language.  Music: The children could compose and record backing music for their cartoons</p> <p><b>Unit progression:</b></p> <p>Unit 3.2 - We are bug fixers  Unit 4.1 - We are software developers</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <u>key experiences</u>:- Presenting a period of history to educate.  <u>key reflection</u>:- How our actions can change the way we're remembered.</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards  Key Questions  What is storyboarding?  How can I create a simple animation?</p> <p><b>Computing Knowledge:</b>  Create an algorithm for an animated scene in the form of a storyboard. Write a program in Scratch to create the animation. Correct mistakes in their animation programs.</p>	<p><b>Digital Safety Vocabulary</b></p> <p><b>Privacy</b> - keeping personal information private  <b>Password</b> - a memorable secret sequence of letters, numbers and characters to keep information safe  <b>Acceptable use</b> - Rules that we follow on devices to keep safe and legal.  <b>Monitoring</b> - When digital activity is viewed by a moderator.  <b>Sharing</b> - Sending and receiving information and content, including posting.  <b>Website</b> - An online platform for storing and sharing information and digital media.  <b>Social Media</b> - Online spaces for people to share their lives and connect with other people.  <b>Consequences</b> - The results of our online actions.  <b>Virus</b> - A dangerous program that can harm devices and make information vulnerable.  <b>Protect</b> - Keeping yourself safe by following advice and using safety software like antivirus programs.  <b>CEOP</b> - Child Exploitation and Online Protection.  <b>Settings</b> - Where you can change your device's preferences, see what activity has happened on the device and change security.  <b>Digital Footprint</b> - A record of someone's activity online. Everything online can exist permanently and travel the world once it reaches the public domain.</p>

<p><b>(Y3)</b>  <b>3.2 We are bug fixers</b>  <i>Finding and correcting bugs in programs</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• <b>Debug programs that accomplish specific goals.</b></li> <li>• <b>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</b></li> <li>• <b>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</b></li> </ul>	<p><b>Curriculum Link:</b>  English: Programming emphasises a precise use of language and, in traditional, text-based programming languages, the importance of correct spelling and punctuation.  Maths: This unit develops skills in logical reasoning and problem solving that can be applied right across the programme of study.  Science: The work in this unit links to the requirements for working scientifically; in particular, making systematic and careful observations, and using results to draw simple conclusions and suggest improvements.</p> <p><b>Unit progression:</b>  Unit 4.1 - We are software developers  Unit 5.1 - We are games developers</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <a href="#">key experiences</a>:- Finding and correcting mistakes.  <a href="#">key reflection</a>:- Marvellous mistakes.</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards  Key Questions  What is a bug in a program?  How do some algorithms search for bugs?</p> <p><b>Computing Knowledge:</b>  Develop a number of strategies for finding errors in programs. Build up resilience and strategies for problem solving. Increase their knowledge and understanding of Scratch. Recognise a number of common types of bug in software.</p>	<p><b>Cookies</b> - Packets of data stored on your device by visiting websites.  <b>Data</b> - Information.  <b>Permissions</b> - Being granted access to online sources.  <b>Consent</b> - To give permission for an activity.  <b>Report</b> - To tell someone in a position of trust if something unacceptable has happened online.  <b>Reliable</b> - Information that is trustworthy and fact-checked.  <b>Tell</b> - Reporting unacceptable content to a trusted adult.</p> <p><b>Programming Vocabulary</b>  <b>Sequence</b> - the order that instructions are carried out in.  <b>Repetition</b> - to use an instruction more than once.  <b>Loops</b> - to use an instruction over and over.  <b>Debugging</b> - to look for errors in instructions and fix them.  <b>Algorithms</b> - a set of rules or instructions that can be followed to achieve something.  <b>Procedure</b> - A set of instructions that are followed in an event.  <b>Testing</b> - running a set of commands to see if they work as intended.  <b>Sensor</b> - Detects any kind of input and triggers an output.  <b>Logical thinking</b> - Thinking about ordering and actions to reach a goal.  <b>Commands</b> - Clear instructions that are simple to follow.  <b>Instructions</b> - A direction or order.  <b>Problem</b> - A situation where something happens that is not wanted or expected.</p>
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<p>(Y3)  <b>3.3 We are presenters</b> <i>Videoing performance</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• <b>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.</b></li> <li>• <b>Work with various forms of input and output.</b></li> <li>• <b>Use technology safely, respectfully and responsibly.</b></li> </ul>	<p><b>Curriculum Link:</b>  PE: Making a video provides pupils with an opportunity to develop an understanding of how to improve in different physical activities.  English: This project develops skills in spoken language, particularly participating in presentations and performances.  Maths: Evaluating performance in sports whose results are compared by time or distance links to work in measurement. Evaluating performance in sports whose results are compared by scores links to work in number.</p> <p><b>Unit progression:</b>  Unit 4.6 - We are meteorologists</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <u>key experiences</u>:- Creating a video presentation.  <u>key reflection</u>:- Giving and receiving constructive feedback in a digital world.</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards  Key Questions  What can I do to improve the footage taken on a video camera?  How do I edit and improve video footage?</p> <p><b>Computing Knowledge:</b>  Gain skills in shooting live video, such as framing shots, holding the camera steady, and reviewing. Edit video, including adding narration and editing clips by setting in/out points. Understand the qualities of effective video, such as the importance of narrative, consistency, perspective and scene length.</p>	<p><b>Handling Data Vocabulary</b>  <b>Spreadsheet</b> - Software designed to collect, store, present and manipulate data.  <b>Data</b> - Information.  <b>Investigation</b> - To carry out a series of actions to answer a question posed.  <b>Accuracy</b> - How true collected data is.  <b>Interpret</b> - To look at data and say what your findings could or do mean.  <b>Database</b> - A collection of information, often retrieved from a questionnaire or form.</p> <p><b>Electronic Communication Vocabulary</b>  <b>Email</b> - A digital letter sent over the internet.  <b>Forward</b> - Sharing a received email with another recipient.  <b>Download</b> - To store files shared in an email on the device.  <b>Junk</b> - A place where an email system stores emails it predicts are not from your contacts.  <b>Spam</b> - Emails sent randomly to sell products.  <b>At</b> - @ symbol. Found between the recipient's unique address and the email service provider.  <b>Compose</b> - To write a new email.  <b>Send</b> - To send a composed email to a recipient.  <b>Reply</b> - To write a response to a received email,  <b>Draft</b> - A place to store emails that have been written but are not ready to be sent.  <b>Contacts</b> - your email's address book. It is where you will save and find addresses of people you frequently contact.  <b>Search</b> - A feature that allows you to look for a specific email in your Inbox, outbox, drafts and junk quickly by typing a key word or phrase.  <b>Receive</b> - To get an email.</p>
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<p><b>(Y3)</b>  <b>3.4 We are vloggers</b>  <i>Making and sharing a short screencast presentation</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web.</li> <li>• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</li> <li>• Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of content that accomplish given goals, including collecting, analysing, evaluating and presenting information.</li> <li>• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</li> </ul>	<p><b>Curriculum Link:</b>  English: The pupils learn about their topic through reading online sources and structuring their own presentation.  Other subjects: It is best to give pupils a range of quite narrowly defined presentation titles based on a topic being studied in another curriculum area.</p> <p><b>Unit progression:</b>  Unit 3.5 - We are communicators  Unit 5.5 - We are bloggers  Unit 6.4 - We are network engineers</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <a href="#">key experiences</a>: - Creating a presentation to educate.  <a href="#">key reflection</a>: - What changes a learner into a teacher?</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards  Key Questions  What is a vlogger and how is vlogging used in the wider world?  What is a screencast?</p> <p><b>Computing Knowledge:</b>  Use a search engine to learn about a new topic. Plan, design and deliver an interesting and engaging presentation. Search for and evaluate online images. Create their own original images. Create a video slidecast of a narrated presentation. Develop understanding of how the internet, the web and search engines work.</p>	<p><b>Attachment</b> - A file sent with an email, identified by a paperclip icon.  <b>Address</b> - username@email service provider  <b>Signature</b> - Adding your own unique mark to the close of your email so people know it's you.  <b>Link</b> - A clickable line of text that will take you to a website (highlighted in blue).  <b>Website - Website</b> - An online platform for storing and sharing information and digital media.  <b>Username</b> - your unique name for your email.  <b>Password</b> - A secret set of memorable numbers, letters and characters to protect your email account.  <b>Subject</b> - A line that tells your recipient what your email is about.  <b>Copy</b> - adding another person into an email to someone so they are aware of the content. It is for their reference (cc).</p>
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<p><b>(Y3)</b>  <b>3.5 We are communicators</b>  <i>Communicating safely on the internet</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• <b>Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web.</b></li> <li>• <b>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</b></li> <li>• <b>Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of content that accomplish given goals, including collecting, analysing, evaluating and presenting information.</b></li> <li>• <b>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</b></li> </ul>	<p><b>Curriculum Link:</b></p> <p>English: This unit provides opportunities for the children to write for a range of real purposes and audiences as part of their work across the curriculum.</p> <p>History: You could link this unit to a history topic, such as communication through the ages.</p> <p>Languages: If you link with a partner school abroad, this unit could provide opportunities for the children to understand and respond to spoken and written language from a variety of authentic sources.</p> <p>Sport, music, art and drama would also provide contexts for communication, making it particularly relevant to share rich media.</p> <p><b>Unit progression:</b></p> <p>Unit 4.5 - We are co-authors  Unit 5.5 - We are bloggers</p> <p><b>Opportunities to explore spirituality/ thread:</b></p> <p><u>key experiences</u>:- Using email and video conferencing.  <u>key reflection</u>:- how technology can support human connections.</p> <p><b>Retrieval docs</b></p> <p>Self-assessment checklists and Stickers awards</p> <p><b>Key Questions</b></p> <p>What is video conferencing and what is it useful for?  What do we need to consider to stay safe when streaming video online?</p> <p><b>Computing Knowledge:</b></p> <p>Develop a basic understanding of how email works. Gain skills in using email. Be aware of broader issues surrounding email, including 'netiquette' and online safety. Work collaboratively with a remote partner. Experience video conferencing.</p>
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<p><b>(Y3)</b>  <b>3.6 We are opinion pollsters</b>  <i>Collecting and analysing data</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• <b>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.</b></li> <li>• <b>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.</b></li> </ul>	<p><b>Curriculum Link:</b>  English: The children can apply their knowledge of sentence structures by creating well-structured and unambiguous questions. Reporting on the results of the survey provides an opportunity to participate in presentations.  Maths: This unit allows the children to apply work in statistics on interpreting and presenting data.  PSHE: The topics the children choose to investigate may be concerned with the broader aspects of school life, such as enjoyment of lessons, school food, play time or homework.</p> <p><b>Unit progression:</b>  Unit 4.6 - We are meteorologists</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <u>key experiences</u>: - learning about what others think and feel, like and dislike.  <u>key reflection</u>: - Shouldn't we all aim to know each other better?</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards  Key Questions  How do I use the net to create a survey and collect data?  How can I analyse and interrogate the data I collect?</p> <p><b>Computing Knowledge:</b>  Understand some elements of survey design. Understand some ethical and legal aspects of online data collection. Use the web to facilitate data collection. Gain skills in using charts to analyse data. Gain skills in interpreting results.</p>
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<p><b>(Y4)</b>  <b>4.1 We are software developers</b>  <i>Developing a simple educational game</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Design, write and debug programs that accomplish specific goals.</li> <li>• Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</li> <li>• Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</li> </ul>	<p><b>Curriculum Link:</b></p> <p>Maths: Games can be used for reinforcing many areas of mathematics. Possible applications include practising recall of multiplication and/or division facts, rounding decimals with one decimal place to the nearest whole number, or converting between different units of measure.</p> <p>English: Using audio recording and playback, it is possible to create spelling tests.</p> <p>Languages: Games can be used to practise vocabulary in foreign languages</p> <p><b>Unit progression:</b>  Unit 5.1 - We are game developers</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <a href="#">key experiences</a>:- Creating an educational game.  <a href="#">key reflection</a>:- Fulfillment of helping others to learn.</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards  Key Questions  What is a variable?  What does input and output mean when programming?</p> <p><b>Computing Knowledge:</b>  Develop an educational computer game using selection and repetition. Understand and use variables. Start to debug computer programs. Recognise the importance of user interface design, including consideration of input and output.</p>	<p><b><u>Multimedia Vocabulary</u></b></p> <p><b>Audience</b> - who your digital content is intended for.</p> <p><b>Atmosphere</b> - The mood created by your digital creations.</p> <p><b>Structure</b> - How your digital content is presented, including the order and appearance.</p> <p><b>Sound</b> - Information communicated through a device's speakers or headphones.</p> <p><b>Outcome</b> - The intended product of your digital creations.</p> <p><b>Text</b> - Information communicated through letters, numbers and characters.</p> <p><b>Edit</b> - to make changes to your digital content.</p> <p><b>Tools</b> - Found on toolbars, these help you create digital content and change it to your liking.</p> <p><b>Media</b> - Created content designed for an audience.</p> <p><b>Recording</b> - To use a device's microphone to collect sound information.</p> <p><b>Purpose</b> - thinking about what your digital content will be used for.</p> <p><b>Video</b> - to capture and order images and sounds for an audience.</p> <p><b><u>Our Technical World Vocabulary</u></b></p> <p><b>Internet</b> - A digital means for people to share information.</p> <p><b>World Wide Web</b> - Devices and users that are connected by the internet.</p> <p><b>Search Engine Results</b> - The string of hits you receive when searching a keyword or phrase on a search engine.</p> <p><b>Copyright</b> - Digital content that is owned by a person and must not be used without permission.</p>
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<p><b>(Y4)</b>  <b>4.2 We are toy designers</b>  <i>Prototyping an interactive toy</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Design, write and debug programs that accomplish specific goals.</li> <li>• Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</li> <li>• Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</li> </ul>	<p><b>Curriculum Link:</b>  D&amp;T: Pupils could construct the toys they have designed, and use the computer to control them. (See Variations to try.)  Music: The toy could be a simple musical instrument, using inputs to control sounds played by the computer.  English: The pitch presentation will allow pupils to develop skills in spoken language.</p> <p><b>Unit progression:</b>  Unit 5.1 - We are game developers</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <a href="#">key experiences</a>:- Programming a toy.  <a href="#">key reflection</a>:- Multiplayer games - the more the merrier.</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards  Key Questions  How do I write a program to control an interactive toy?  How will I use testing to precise my program?</p> <p><b>Computing Knowledge:</b>  Design and make an on-screen prototype of a computer-controlled toy. Understand different forms of input and output (such as sensors, switches, motors, lights and speakers). Design, write and debug the control and monitoring program for their toy.</p>	<p><b>Fact</b> - verified and true information.  <b>Opinion</b> - Someone's beliefs.  <b>Hyperlink</b> - A clickable line of text that takes the user to a web page or document from a document.  <b>Link</b> - A clickable line of text that takes a user to a web page or document from the internet.  <b>Email</b> - A digital way to share information securely.  <b>Favourites</b> - A feature of a web browser that allows a user to access useful sites, often on a bar at the top.  <b>Bookmarks</b> - A browser feature that allows a user to save web page addresses for later.  <b>Network</b> - A series of devices linked together.</p>
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<p><b>(Y4)</b>  <b>4.3 We are musicians</b>  <i>Producing digital music</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Design, write and debug programs that accomplish specific goals.</li> <li>• Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</li> <li>• Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</li> </ul>	<p><b>Curriculum Link:</b>  Music: Pupils develop their understanding of musical and staff notation (extensions).  Maths: The unit provides opportunities for links with recalling multiplication and division facts if the idea of 'beats per bar' is discussed.</p> <p><b>Unit progression:</b>  Unit 5.1 - We are game developers</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <u>key experiences</u>:- Creating new digital music.  <u>key reflection</u>:- How music reflects a mood.</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards  Key Questions  How can I use technology to create digital music?  What effects can I apply to a digital composition?</p> <p><b>Computing Knowledge:</b>  Use one or more programs to edit music.  Create and develop a musical composition, refining their ideas through reflection and discussion. Develop collaboration skills.  Develop an awareness of how their composition can enhance work in other media.</p>
<p><b>(Y4)</b>  <b>4.4 We are HTML editors</b>  <i>Editing and writing HTML</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Design, write and debug programs that accomplish specific goals.</li> <li>• Use sequence, selection, and repetition in programs; work with</li> </ul>	<p><b>Curriculum Link:</b>  English: As with any text-based coding, spelling, punctuation and grammar are important.  History: Written communication over time, with the web as the successor to printing, could form the subject of 'a study of an aspect or theme in British history that extends pupils' chronological knowledge beyond 1066'.</p>

	<p><b>variables and various forms of input and output.</b></p> <ul style="list-style-type: none"> <li>• Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</li> </ul>	<p>Geography: Creation of a webpage about Climate Change.</p> <p><b>Unit progression:</b> Unit 4.5 - We are co-authors Unit 5.4 - We are web developers</p> <p><b>Opportunities to explore spirituality/ thread:</b> <u>key experiences</u>:- Creating a climate change awareness website. <u>key reflection</u>:- Protecting our world and being good shepherds.</p> <p><b>Retrieval docs</b> Self-assessment checklists and Stickers awards Key Questions What is HTML? What is editing and why is it important when writing in HTML?</p> <p><b>Computing Knowledge:</b> Understand some technical aspects of how the internet makes the web possible. Use HTML tags for elementary mark up. Use hyperlinks to connect ideas and sources. Code up a simple web page with useful content. Understand some of the risks in using the web.</p>
<p><b>(Y4)</b> <b>4.5 We are co-authors</b> <i>Producing a wiki</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Solve problems by decomposing them into smaller parts.</li> <li>• 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.</li> </ul>	<p><b>Curriculum Link:</b> English: The unit helps develop the pupils' sense of writing for an audience and for a purpose. The proofreading and copy-editing skills the pupils use will reinforce spelling and grammar work.</p> <p><b>Unit progression:</b> Unit 5.4 - We are Web developers</p> <p><b>Opportunities to explore spirituality/ thread:</b></p>

	<ul style="list-style-type: none"> <li>• Use search technologies effectively.</li> <li>• Use ... a variety of software (including internet services) ... to ... create ... content ... including ... presenting information.</li> <li>• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</li> </ul>	<p><u>key experiences</u>:- Working together to create digital content.</p> <p><u>key reflection</u>:- Whose idea was this anyway? Ownership and intellectual property..</p> <p><b>Retrieval docs</b> Self-assessment checklists and Stickers awards</p> <p><b>Key Questions</b> What is the difference between being a collaborator and being the owner of published online content? What do we need to know and be aware of when using the work of others online?</p> <p><b>Computing Knowledge:</b> Understand the conventions for collaborative online work, particularly in wikis. Be aware of their responsibilities when editing other people's work. Become familiar with Wikipedia, including potential problems associated with its use. Practise research skills. Write for a target audience using a wiki tool. Develop collaboration skills. Develop proofreading skills.</p>
<p><b>(Y4)</b> <b>4.6 We are meteorologists</b> <i>Presenting the weather</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Work with variables and various forms of input and output.</li> <li>• Use logical reasoning to explain how some simple algorithms work.</li> <li>• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</li> <li>• Select, use and combine a variety of software (including internet</li> </ul>	<p><b>Curriculum Link:</b></p> <p>English: This unit provides opportunities for the pupils to develop their mastery of spoken language; in particular, giving well-structured descriptions, speaking audibly and fluently, participating in presentations, and selecting and using appropriate registers for communication.</p> <p>Geography: There are opportunities for the pupils to consolidate their knowledge of the geographical regions of the UK and the eight points of the compass.</p> <p>Science: This unit covers almost all the statutory requirements for 'Working scientifically' in the programme of study for lower Key Stage 2.</p>

	<p>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.</p>	<p>Maths: Pupils practise interpreting and presenting discrete and continuous data using appropriate graphical methods, including bar charts.</p> <p><b>Unit progression:</b> Unit 5.2 - We are cryptographers</p> <p><b>Opportunities to explore spirituality/ thread:</b> <u>key experiences</u>:- Monitoring, recording and presenting weather. <u>key reflection</u>:- The power of nature.</p> <p><b>Retrieval docs</b> Self-assessment checklists and Stickers awards Key Questions How are instruments used to collect data? How do we use presenting data to recognise patterns and inconsistencies?</p> <p><b>Computing Knowledge:</b> Understand different measurement techniques for weather, both analogue and digital. Use computer-based data logging to automate the recording of some weather data. Use spreadsheets to create charts Analyse data, explore inconsistencies in data and make predictions Practise using presentation software and, optionally, video.</p>	
<p><b>(Y5)</b> <b>5.1 We are game developers</b> <i>Developing an interactive game</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</li> <li>• Use sequence, selection, and repetition in programs; work with</li> </ul>	<p><b>Curriculum Link:</b> Art and design: Pupils can improve their art and design skills by creating artwork for their games. Music: Pupils can record sound or compose music for their games</p> <p><b>Unit progression:</b> N/A</p>	<p><b>Digital Safety Vocabulary</b> <b>Privacy</b> - keeping personal information private <b>Password</b> - a memorable secret sequence of letters, numbers and characters to keep information safe <b>Acceptable use</b> - Rules that we follow on devices to keep safe and legal. <b>Monitoring</b> - When digital activity is viewed by a moderator.</p>



	<p>variables and various forms of input and output.</p> <ul style="list-style-type: none"> <li>• Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</li> <li>• 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...</li> </ul>	<p><b>Opportunities to explore spirituality/ thread:</b>  <u>key experiences</u>:- Making a Mayan world in Kodu.  <u>key reflection</u>:- From ancient civilizations to our technological world - how far we've come.</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards</p> <p>Key Questions  How do 'if', 'when' and 'do' statements work when coding?  How do I create a computer game with a range of interactive objects and allow a gamer to achieve a goal?</p> <p><b>Computing Knowledge:</b>  Create original artwork and sound for a game. Design and create a computer program for a computer game, which uses sequence, selection, repetition and variables. Detect and correct errors in their computer game. Use iterative development techniques (making and testing a series of small changes) to improve their game.</p>	<p><b>Sharing</b> - Sending and receiving information and content, including posting.  <b>Website</b> - An online platform for storing and sharing information and digital media.  <b>Social Media</b> - Online spaces for people to share their lives and connect with other people.  <b>Consequences</b> - The results of our online actions.  <b>Virus</b> - A dangerous program that can harm devices and make information vulnerable.  <b>Protect</b> - Keeping yourself safe by following advice and using safety software like antivirus programs.  <b>CEOP</b> - Child Exploitation and Online Protection.  <b>Settings</b> - Where you can change your device's preferences, see what activity has happened on the device and change security.  <b>Digital Footprint</b> - A record of someone's activity online. Everything online can exist permanently and travel the world once it reaches the public domain.  <b>Cookies</b> - Packets of data stored on your device by visiting websites.  <b>Data</b> - Information.  <b>Permissions</b> - Being granted access to online sources.  <b>Consent</b> - To give permission for an activity.  <b>Report</b> - To tell someone in a position of trust if something unacceptable has happened online.  <b>Reliable</b> - Information that is trustworthy and fact-checked.  <b>Tell</b> - Reporting unacceptable content to a trusted adult.</p> <p><b>Programming Vocabulary</b>  <b>Block</b> - A set of algorithms that govern the way a part of a program behaves.</p>
<p><b>(Y5)</b>  <b>5.2 We are cryptographers</b>  <i>Cracking codes</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</li> <li>• 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.</li> <li>• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable</li> </ul>	<p><b>Curriculum Link:</b>  Maths: Encryption and decryption use mathematical functions. Frequency tables play a role in cracking substitution ciphers.  History: There are interesting stories involving the use of cryptography throughout history.  PSHE: Privacy, safety and identity can link to topics in the school PSHE curriculum.  D&amp;T and science: The pupils could make simple electrical telegraph circuits.</p> <p><b>Unit progression:</b>  Unit 5.4 - We are web developers</p> <p><b>Opportunities to explore spirituality/ thread:</b></p>	

	<p><b>behaviour; identify a range of ways to report concerns about content and contact.</b></p>	<p><u>key experiences</u>:- Sending and receiving coded messages.  <u>key reflection</u>:- Staying safe, privacy and security.</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards  Key Questions  What is encryption?  How do I create complex passwords and why is this so important?</p> <p><b>Computing Knowledge:</b>  Be familiar with semaphore and Morse code. Understand the need for private information to be encrypted. Encrypt and decrypt messages in simple ciphers. Appreciate the need to use complex passwords and to keep them secure. Have some understanding of how encryption works on the web.</p>	<p><b>Commands</b> - Clear instructions that are simple to follow.  <b>Logical Reasoning</b> - Thinking about how ordering and actions can reach a goal.  <b>Repetition</b> - To use an algorithm more than once in a script.  <b>Variables</b> - changes that can occur within an algorithm.  <b>Script</b> - A document that contains lines of code that tell a program what to do and how to behave.  <b>Sprite</b> - A character within a computer game.  <b>Input</b> - An action that has to happen for something else to occur.  <b>Output</b> - The result of an input.  <b>Algorithm</b> - A set of rules or instructions that can be followed to achieve something.  <b>Sensor</b> - Detects any kind of input and triggers an output.</p>
<p><b>(Y5)</b>  <b>5.3 We are artists</b>  <i>Fusing geometry and art</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</li> <li>• Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</li> <li>• 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,</li> </ul>	<p><b>Curriculum Link:</b>  Unit 5.6 - We are architects</p> <p><b>Unit progression:</b>  Art and design: The children learn about some famous artists.  Maths: This unit draws on pupils' knowledge of angles, 2D shapes, translations and that angles at a point total 360°.  RE: There are opportunities to explore Islamic art.  PE: The pupils can explore turtle graphics instructions within a PE or dance context.</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <u>key experiences</u>:- Creating Mondrian style geometric patterns using Aggie.io.  <u>key reflection</u>:- Abstract beauty.</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards</p>	<p><b>Handling Data Vocabulary</b>  <b>Spreadsheet</b> - Software designed to collect, store, present and manipulate data.  <b>Data</b> - Information.  <b>Investigation</b> - To carry out a series of actions to answer a question posed.  <b>Accuracy</b> - How true collected data is.  <b>Interpret</b> - To look at data and say what your findings could or do mean.  <b>Database</b> - A collection of information, often retrieved from a questionnaire or form.</p> <p><b>Multimedia Vocabulary</b>  <b>Audience</b> - who your digital content is intended for.</p>

	<p><b>analysing, evaluating and presenting data and information.</b></p>	<p>Key Questions          What is an animated gif?          Where on the web are animated gif used?</p> <p><b>Computing Knowledge:</b>          Develop an appreciation of the links between geometry and art. Become familiar with the tools and techniques of a vector graphics package. Develop an understanding of turtle graphics. Experiment with the tools available, refining and developing their work as they apply their own criteria to evaluate it and receive feedback from their peers. Develop some awareness of computer generated art, in particular fractal-based landscapes.</p>	<p><b>Atmosphere</b> - The mood created by your digital creations.  <b>Structure</b> - How your digital content is presented, including the order and appearance.  <b>Sound</b> - Information communicated through a device's speakers or headphones.  <b>Outcome</b> - The intended product of your digital creations.  <b>Text</b> - Information communicated through letters, numbers and characters.  <b>Edit</b> - to make changes to your digital content.  <b>Tools</b> - Found on toolbars, these help you create digital content and change it to your liking.  <b>Media</b> - Created content designed for an audience.  <b>Recording</b> - To use a device's microphone to collect sound information.  <b>Purpose</b> - thinking about what your digital content will be used for.  <b>Video</b> - to capture and order images and sounds for an audience.</p>
<p><b>(Y5)</b>  <b>5.4 We are web developers</b>  <i>Creating a website about cyber safety</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• <b>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.</b></li> <li>• <b>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</b></li> <li>• <b>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.</b></li> </ul>	<p><b>Curriculum Link:</b>          English: There is scope for pupils to apply their skills in summarising text, as well as their knowledge of spelling, grammar and punctuation.          History: Children could make use of skills in conducting an enquiry and in considering the authority and potential bias of source documents.</p> <p><b>Unit progression:</b>          Unit 5.5 - We are bloggers</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <u>key experiences</u>:- Experiencing how the web meets our needs and protects us.  <u>key reflection</u>:- Responsibility. Keeping myself and others safe.</p> <p><b>Retrieval docs</b>          Self-assessment checklists and Stickers awards</p> <p>Key Questions          What features do websites have to keep users secure?</p>	

	<ul style="list-style-type: none"> <li>• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</li> </ul>	<p>What are the different threats that users need protecting from online?</p> <p><b>Computing Knowledge:</b> Develop their research skills to decide what information is appropriate. Understand some elements of how search engines select and rank results. Question the plausibility and quality of information. Develop and refine their ideas and text collaboratively. Develop their understanding of online safety and responsible use of technology.</p>
<p><b>(Y5)</b> <b>5.5 We are bloggers</b> <i>Sharing experiences and opinions</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</li> </ul>	<p><b>Curriculum Link:</b> English: There are ample writing opportunities in this unit where children plan, draft and evaluate their own (and others') writing. History: The blog activity could replace a diary or journal activity, e.g. the blog of an ancient Greek.</p> <p><b>Unit progression:</b> N/A</p> <p><b>Opportunities to explore spirituality/ thread:</b> <u>key experiences</u>:- Creating a Padlet to share digital content and providing feedback. <u>key reflection</u>:- Do "likes" add value?</p> <p><b>Retrieval docs</b> Self-assessment checklists and Stickers awards Key Questions How are blogs used to review ranges of products and services? What do we need to remember and consider when blogging about the work of others online?</p> <p><b>Computing Knowledge:</b></p>

	<ul style="list-style-type: none"> <li>• ...be discerning in evaluating digital content.</li> </ul>	<p>Become familiar with blogs as a medium and a genre of writing. Create a sequence of blog posts on a theme. Incorporate additional media. Comment on the posts of others. Develop a critical, reflective view of a range of media, including text.</p>
<p><b>(Y5)</b>  <b>5.6 We are architects</b>  <i>Creating a virtual space</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</li> <li>• 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.</li> </ul>	<p><b>Curriculum Link:</b>  Art and design: Pupils could take scans or photos of their original drawings, paintings or sculptures before uploading them to their virtual galleries.  Maths: Pupils apply skills from maths work in the domains of measurement and geometry.  Science: There are opportunities to link this unit to work on properties and changes of materials, e.g. by exploring the properties of building materials, such as their hardness and transparency.</p> <p><b>Unit progression:</b>  N/A</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <u>key experiences</u>:- Creating digital building designs.  <u>key reflection</u>:- What will cities in the future look like?</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards  Key Questions  How does technology support the field of architecture?  What are the benefits of creating a virtual environment?</p> <p><b>Computing Knowledge:</b>  Understand the work of architects, designers and engineers working in 3D. Develop familiarity with a simple CAD (computer aided design) tool. Develop spatial awareness by exploring and</p>

		<p>experimenting with a 3D virtual environment. Develop greater aesthetic awareness.</p>	
<p><b>(Y6)</b>  <b>6.1 We are adventure gamers</b>  <i>Making a text-based adventure game</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</li> <li>• Use sequence, selection and repetition in programs; work with variables and various forms of input and output.</li> <li>• Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</li> </ul>	<p><b>Curriculum Link:</b>  English: Using Python (or other text-based languages) helps reinforce the importance of spelling, punctuation and grammar. Opportunity to develop the pupils' descriptive writing and storytelling.</p> <p><b>Unit progression:</b>  Unit 6.2 - We are computational thinkers.</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <a href="#">key experiences</a>:- Creating a digital adventure game on MicroBit using MakeCode.org  <a href="#">key reflection</a>:- A career in Coding?</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards  Key Questions  How do I create a choice-based text game?  How does Python interpret lines of code?</p> <p><b>Computing Knowledge:</b>  Learn some of the syntax of a text-based programming language. Use commands to display text on screen, accept typed user input, store and retrieve data using variables and select from a list. Plan a text-based adventure with multiple 'rooms' and user interaction. Thoroughly debug the program.</p>	<p><b>Electronic Communication Vocabulary</b></p> <p><b>Email</b> - A digital letter sent over the internet.</p> <p><b>Forward</b> - Sharing a received email with another recipient.</p> <p><b>Download</b> - To store files shared in an email on the device.</p> <p><b>Junk</b> - A place where an email system stores emails it predicts are not from your contacts.</p> <p><b>Spam</b> - Emails sent randomly to sell products.</p> <p><b>At</b> - @ symbol. Found between the recipient's unique address and the email service provider.</p> <p><b>Compose</b> - To write a new email.</p> <p><b>Send</b> - To send a composed email to a recipient.</p> <p><b>Reply</b> - To write a response to a received email,</p> <p><b>Draft</b> - A place to store emails that have been written but are not ready to be sent.</p> <p><b>Contacts</b> - your email's address book. It is where you will save and find addresses of people you frequently contact.</p> <p><b>Search</b> - A feature that allows you to look for a specific email in your Inbox, outbox, drafts and junk quickly by typing a key word or phrase.</p> <p><b>Receive</b> - To get an email.</p> <p><b>Attachment</b> - A file sent with an email, identified by a paperclip icon.</p> <p><b>Address</b> - username@email service provider</p> <p><b>Signature</b> - Adding your own unique mark to the close of your email so people know it's you.</p> <p><b>Link</b> - A clickable line of text that will take you to a website (highlighted in blue).</p> <p><b>Website - Website</b> - An online platform for storing and sharing information and digital media.</p> <p><b>Username</b> - your unique name for your email.</p>



<p><b>(Y6)</b>  <b>6.2 We are computational thinkers</b>  <i>Mastering algorithms for searching, sorting and mathematics</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Design, write and debug programs that accomplish specific goals.</li> <li>• Use sequence, selection and repetition in programs; work with variables and various forms of input and output.</li> <li>• Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</li> </ul>	<p><b>Curriculum Link:</b>          Maths - using systematic techniques that can be expressed as algorithms, develop mathematical fluency. Ordering numbers, decimals, percentages and fractions. Understanding or developing algorithms for checking whether a number is a prime, or to work out the highest common factor of a pair of numbers</p> <p><b>Unit progression:</b>          N/A</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <u>key experiences</u>:- Creating more complex algorithms to carry out a task.  <u>key reflection</u>:- Do as you're told!</p> <p><b>Retrieval docs</b>          Self-assessment checklists and Stickers awards          Key Questions          How can I use algorithms to sort and search?          How do pre-set data ranges make algorithms more efficient?</p> <p><b>Computing Knowledge:</b>          Develop the ability to reason logically about algorithms. Understand how some key algorithms can be expressed as programs. Understand that some algorithms are more efficient than others for the same problem. Understand common algorithms for sorting and searching. Appreciate algorithmic approaches to problems in mathematics.</p>	<p><b>Password</b> - A secret set of memorable numbers, letters and characters to protect your email account.  <b>Subject</b> - A line that tells your recipient what your email is about.  <b>Copy</b> - adding another person into an email to someone so they are aware of the content. It is for their reference (cc).</p> <p><b>Our Technical World Vocabulary</b>  <b>Internet</b> - A digital means for people to share information.  <b>World Wide Web</b> - Devices and users that are connected by the internet.  <b>Search Engine Results</b> - The string of hits you receive when searching a keyword or phrase on a search engine.  <b>Client</b> - A computer connected to a network that can retrieve information from a server.  <b>Router</b> - A device that transmits Wifi signals for wireless devices to access the internet.  <b>Server</b> - A computer or computer program that manages devices on a network.  <b>Domain Name</b> - The part of a network address that shows who it belongs to.  <b>Server</b> -  <b>Hyperlink</b> - A clickable line of text that takes the user to a web page or document from a document.  <b>Link</b> - A clickable line of text that takes a user to a web page or document from the internet.  <b>Algorithm</b> - A set of rules or instructions that can be followed to achieve something.  <b>Page Rank</b> - How search engines like Google order the results from a search.  <b>Email</b> - A digital way to share information securely.</p>
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<p><b>(Y6)</b>  <b>6.3 We are advertisers</b>  <i>Creating a short television advert</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</li> <li>• 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.</li> <li>• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</li> </ul>	<p><b>Curriculum Link:</b>  English - Pupils practise elements of composition (planning, drafting, writing, evaluating and editing).  PSHE - Pupils could take a particular PSHE issue and make a film to raise awareness of this</p> <p><b>Unit progression:</b>  Unit 6.5 We are travel writers  Unit 6.6 We are publishers</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <u>key experiences</u>:- Planning, filming and reviewing footage.  <u>key reflection</u>:- Can we change people's minds?</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards  Key Questions  How does digital advertising content cater for different audiences?  How do I create a television advert using a variety of computational skills?</p> <p><b>Computing Knowledge:</b>  Think critically about how video is used to promote a cause. Storyboard an effective advert for a cause. Work collaboratively to shoot suitable original footage and source additional content, acknowledging intellectual property rights. Work collaboratively to edit the assembled content to make an effective advert.</p>
<p><b>(Y6)</b>  <b>6.4 We are network technicians</b>  <i>Exploring computer networks including the internet</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• 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.</li> </ul>	<p><b>Curriculum Link:</b>  English - Pupils write what they learn about the internet.  Design and technology - Complex systems such as the internet and computer networks illustrate engineering ideas.  Science - This unit can be linked to the electricity content of the curriculum.</p>

**Information** - Facts provided or learned about something or someone.



	<ul style="list-style-type: none"> <li>• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</li> </ul>	<p>Geography - In following the route taken by data packets, children can practise geography skills.</p> <p><b>Unit progression:</b> Unit 6.5 - We are travel writers.</p> <p><b>Opportunities to explore spirituality/ thread:</b> <u>key experiences</u>:- Learning how technology talks. <u>key reflection</u>:- Making connections and following rules.</p> <p><b>Retrieval docs</b> Self-assessment checklists and Stickers awards Key Questions How are devices connected across the world? How are devices connected with a building?</p> <p><b>Computing Knowledge:</b> Appreciate that computer networks transmit and receive information digitally. Understand the basic hardware needed for computer networks to work. Understand key features of internet communication protocols. Develop a basic understanding of how domain names are converted to numerical IP addresses.</p>
<p><b>(Y6)</b> <b>6.5 We are travel writers</b> <i>Using media and mapping to document a trip</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Use search technologies effectively, appreciate how results are selected and ranked, and be</li> </ul>	<p><b>Curriculum Link:</b> Geography - Mapping, latitude and longitude. GPS coordinates. Maths - Comparing cost. English - audio, video and written content. Art - take and edit digital photographs.</p> <p><b>Unit progression:</b> Unit 6.6 - We are Publishers</p> <p><b>Opportunities to explore spirituality/ thread:</b></p>

	<p><b>discerning in evaluating digital content.</b></p> <ul style="list-style-type: none"> <li>• <b>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.</b></li> <li>• <b>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</b></li> </ul>	<p><b>key experiences:-</b> Creating a Google Earth presentation that plots Shackleton’s Journey.  <b>key reflection:-</b> Inspired to travel where nobody has been before - human endeavour.</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards</p> <p><b>Key Questions</b>  What is a GPS and how does it collect data?  How can I attach digital content to a GPS ‘dropped pin’?</p> <p><b>Computing Knowledge:</b>  Research a location online using a range of resources appropriately. Understand the safe use of mobile technology, including GPS. Capture images, audio and video while on location. Showcase shared media content through a mapping layer.</p>
<p><b>(Y6)</b>  <b>6.6 We are publishers</b>  <i>Creating a yearbook or magazine</i></p>	<p><b>Critical concepts:</b></p> <ul style="list-style-type: none"> <li>• <b>Understand computer networks including the internet and the opportunities they offer for communication and collaboration.</b></li> <li>• <b>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</b></li> <li>• <b>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,</b></li> </ul>	<p><b>Curriculum Link:</b>  English - SPaG coverage during the writing process.  Art - adding meaningful images to projects.</p> <p><b>Unit progression:</b>  6.5 - We are travel writers</p> <p><b>Opportunities to explore spirituality/ thread:</b>  <b>key experiences:-</b> Creating a digital memory of our time in school.  <b>key reflection:-</b> What a journey it has been, who am I now?</p> <p><b>Retrieval docs</b>  Self-assessment checklists and Stickers awards</p> <p><b>Key Questions</b>  How are search engine results ranked and why does this happen?  How do I create an ebook?</p>

	<p>analysing, evaluating and presenting data and information.</p> <p>• Use technology safely, respectfully and responsibly.</p>	<p><b>Computing Knowledge:</b>          Manage or contribute to large collaborative projects, facilitated using online tools. Write and review content. Source digital media while demonstrating safe, respectful and responsible use. Design and produce a high-quality print document.</p>
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**Primary National Curriculum**

**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.

**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.