St Dennis Primary Academy – Computing Long Term Plan

"Computers are going to be a big part of our future... and that future is yours to shape" - Barack Obama

| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
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| EYFS | Pupils learn how to take photographs using a digital device e.g Photographing plants, key places and things of interest on nature walks, village walks and educational visits.<br>Children explore different uses for the technology in the world around them e.g. Using the scanner in the library, completing activities on the interactive whiteboard, sending whole class emails, using remote controls and using lightboxes and microscopes.<br>Pupils understand the need for safety around electrical items e.g. Setting class rules about not touching switches, keeping water and food away from electrical items and sockets having safety covers.<br>Children learn what to do if they feel worried or uncomfortable about a situation online e.g. Safer Internet Day activities, Circle Times and modelling appropriate apps and behaviours around technology, such as asking before taking a person's photograph. | | | | | |
| Nursery | Learn about the need for safety around electrical items: Setting class rules about not touching switches, keeping water and food away from electrical items and sockets having safety covers. | Learn how to use interactive toys: Use toys with buttons, lights, and sounds to introduce cause-and-effect relationships. | Learn how to use pretend play items: Use toy phones, cameras, or cash registers to mimic real-world technology in the role play area. | Learn how to take photographs: Use iPads to photograph plants, key places and things of interest on nature walks, village walks and educational visits. | Learn how to use technology in everyday life: Discuss and explore how common devices like laptops, microwaves, doorbells, torches or washing machines work. | Learn how to use an interactive board: Use the interactive board to complete simple games. |
| EYFS | Children use the Interactive Whiteboard and iPads to enhance numeracy and literacy.<br>Children take photos of the classroom and school. They are introduced to editing features on iPads. | Children use the Interactive Whiteboard and iPads to enhance numeracy and literacy.<br>Children engage with internet search engines iPads to find out facts about everyday heroes.<br>Class discussions about trusted sites<br>Recording voice memos of questions we want to ask visitors. | Children use the Interactive Whiteboard and iPads to enhance numeracy and literacy.<br>Children program Bee-Bots as animals to take a simple route. | Children use the Interactive Whiteboard and iPads to enhance numeracy and literacy.<br>Children research facts about animals from Newquay Zoo.<br>Children are introduced to the terms 'key words', 'search engine' and 'AI'. | Children use the Interactive Whiteboard and iPads to enhance numeracy and literacy.<br>Children use Bee-Bots as different vehicles and code increasingly more complex routes. | Children use the Interactive Whiteboard and iPads to enhance numeracy and literacy.<br>Children use online mapping tools, Digimaps and Google Maps to locate and understand where we live. |
| Year 1 | Technology around us | Moving a robot | Digital writing | Grouping data | Digital painting | Programming animations |
| Year 2 | Information technology around us | Pictograms | Robot algorithms | Digital photography | Programming quizzes | Digital music |
| Year 3 | Branching databases | Connecting computers | Sequencing sounds | Stop-frame animation | Events and actions in programs | Desktop publishing |

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| Year 4 | The internet | Repetition in shapes | Photo editing | Audio production | Data logging | Repetition in games |
| Year 5 | Systems and searching | Flat-file databases | Selection in physical computing | Video production | Vector graphics | Selection in quizzes |
| Year 6 | Communication and collaboration | 3D modelling | Introduction to spreadsheets | Variables in games | Sensing movement | Webpage creation<br>Plus: Using the micro:bit for primary to secondary transition |

| Computing Systems and Networks | Creating Media | Programming | Data and Information |
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| Year 1 | | | | | | |
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| | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **Topic Question** | What would you use to build a house? | How have toys changed through time? | How do we keep people safe at sea? | How has transport changed over time? | How does your garden grow? | Where in the world would you travel? |
| **Area of Computing** | Computing systems and networks | Programming | Creating media (Text) | Data and information | Creating media (Graphics) | Programming |
| **Unit** | Technology around us | Moving a robot | Digital writing | Grouping data | Digital painting | Programming animations |
| **Builds On** | **New learning** | **New learning** | **New learning** | **New learning** | **Year:** 1<br>**Term:** Spring 2<br>**Unit:** Creating Media (Text) | **Year:** 1<br>**Term:** Autumn 2<br>**Unit:** Programming – Moving a robot |
| **Memory Master** | What is technology? Label a picture of a computer with screen/monitor, mouse, base unit and keyboard and describe what each part is used for. | | | | | |
| **Overview** | Recognising technology in school and using it responsibly. | Writing short algorithms and programs for floor robots and predicting program outcomes. | Using a computer to create and format text, before comparing to writing non-digitally. | Exploring object labels then using them to sort and group objects by properties. | Choosing appropriate tools in a program to create art and making comparisons with working non-digitally. | Designing and programming the movement of a character on screen to tell stories. |
| **Unit Vocabulary** | technology, computer, mouse, trackpad, keyboard, screen, double-click, typing | Bee-Bot, forwards, backwards, turn, clear, go, commands, instructions, directions, left, right, route, plan, algorithm, program | word processor, keyboard, keys, letters, type, numbers, space, backspace, text cursor, capital letters, toolbar, bold, italic, underline, mouse, select, font, undo, redo, | object, label, group, search, image, property, colour, size, shape, value, data set, more, less, most, fewest, least, the same | paint program, tool, paintbrush, erase, fill, undo, shape tools, line tool, fill tool, undo tool, colour, brush style, brush size, pictures, painting, computers | ScratchJr, command, sprite, compare, programming, area, block, joining, start, run, program, background, delete, reset, algorithm, predict, |

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| | | | format, compare, typing, writing | | | effect, change, value, instructions, design |
| **Lesson Sequence** | 1. I can identify technology.<br>2. I can identify a computer and its main parts.<br>3. I can use a mouse in different ways.<br>4. I can use a keyboard to type.<br>5. I can use a keyboard to edit text.<br>6. I can create rules for using technology responsibly. | 1. I can explain what a given command will do.<br>2. I can act out a given word.<br>3. I can combine 'forwards; and 'backwards' commands to make a sequence.<br>4. I can combine four direction commands to make sequences.<br>5. I can plan a simple program.<br>6. I can find one more solution to a problem. | 1. I can use a computer to write.<br>2. I can add and remove text on a computer.<br>3. I can identify that the look of text can be changed on a computer.<br>4. I can make careful choices when changing text.<br>5. I can explain why I used the tools that I chose.<br>6. I can compare typing on a computer to writing on paper. | 1. I can label objects.<br>2. I can identify that objects can be counted.<br>3. I can describe objects in different ways.<br>4. I can count objects with the same properties.<br>5. I can compare groups of objects.<br>6. I can answer questions about groups of objects. | 1. I can describe what different freehand tools do<br>2. I can use the shape tool and the line tools.<br>3. I can make careful choices when painting a digital picture.<br>4. I can explain why I chose the tools I used.<br>5. I can use a computer on my own to paint a picture.<br>6. I can compare painting a picture on a computer and on paper. | 1. I can choose a command for a given purpose.<br>2. I can show that a series of commands can be joined together.<br>3. I can identify the effect of changing a value.<br>4. I can explain that a project can include more than one sprite.<br>5. I can design the parts of a project.<br>6. I can create an algorithm for each sprite. |
| **Critical Knowledge and Understanding** | **Knowledge:**<br>Identify examples of technology and explain how they can help us<br>Recognise that a computer is an example of technology<br>Describe what a keyboard is for<br>Know a computer stores work in files<br>Give examples of rules to keep them safe and healthy when they are using technology in and beyond the home<br>**Implementation:**<br>Choose a piece of technology to do a job<br>Identify the main parts of a computer<br>Use a keyboard to type their name on a computer<br>Turn on the computer and log on with an aid<br>Use a mouse in different ways – click, select and drag | **Knowledge:**<br>Explain what a given command does<br>Predict the outcome of a sequence involving up to four commands<br>Match a command to an outcome<br>Understand that a program is a set of commands that a computer can run<br>Know that a series of instructions can be issued before they are enacted<br>**Implementation:**<br>Predict the outcome of a command on a device<br>Run a command on a floor robot<br>Choose a command for a given purpose<br>Choose a series of words that can be enacted as a program<br>Build a sequence of commands in steps from a given starting point | **Knowledge:**<br>Know that a keyboard is used to enter text into a computer<br>Know that the appearance of text can be changed<br>**Implementation:**<br>Recognise some keys and use them to enter text on to a computer/device including some basic punctuation<br>Add spaces between most words using a space bar<br>Use the backspace key to delete text only as far as the section to be edited<br>Use the toolbar to find and use the bold, italic, and underline tool<br>**Evaluation:**<br>Evaluate how successful they were in meeting the task requirements<br>Identify the differences between writing on a computer and on paper, and explain their own preference | **Knowledge:**<br>Explain how objects have been grouped<br>Know that labels are used to identify a group with similar characteristics<br>**Implementation:**<br>Group the same objects in more than one way<br>Count how many objects are in group and identify which has more<br>Record how many objects are in a group<br>Group objects to answer a question<br>Compare objects to group them explaining what has been found<br>**Evaluation:**<br>Evaluate how successful they were in meeting the task requirements | **Knowledge:**<br>Explain what different freehand tools do<br>Recognise that computers can be used to create a range of art<br>Recognise a tool can be adjusted<br>**Implementation:**<br>Choose and combine paint tools to recreate a picture, explaining choices.<br>Manipulate the brush size and colour to achieve a desired effect<br>Manipulate shapes to create a drawing with thought-out size, colour and proportion.<br>Use the most appropriate paint tools for different jobs and suggest how the tool has enabled the desired outcome<br>**Evaluation:**<br>Consider the impact of choices made<br>Evaluate how successful they | **Knowledge:**<br>Explain what a sprite is<br>Compare different programming blocks<br>Know a series of commands can be joined together to form a program<br>Understand that a program is a set of commands a computer can run<br>**Implementation:**<br>Predict the outcome of a command<br>List commands that can be used on a device<br>Match a command to an outcome<br>Recognise how to run a command<br>Run different commands for different sprites<br>Choose a command for a given purpose<br>Build a sequence of commands in steps |

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| | Use the keyboard to edit text and delete letters<br>Demonstrate that they can use technology safely<br>**Evaluation:**<br>Evaluate how successful they were in meeting the task requirements | Combine commands in a program<br>Run a program on a device<br>Debug a program to correct errors<br>**Evaluation:**<br>Evaluate how successful they were in meeting the task requirements | | | were in meeting the task requirements<br>Identify the differences between painting on a computer and on paper, and explain their own preference | Use the start command to initialise a program<br>Debug a program<br>**Evaluation:**<br>Test a program created and evaluate how successful it has been<br>Identify how closely a plan matches the outcome |
| **Natterhub** | Balance it<br>Question it | Feel it | Secure it | Chat it | Think it | Learn it<br>Mind it |
| **Additional Online Safety through PSHE Curriculum** | | | Safer Internet Day | | Brook - Managing our time safely whilst online | |

| Year 2 | | | | | | |
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| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| Topic Question | What do I need to be healthy? | Who were the great monarchs? | How was the Great Fire of London great? | Who would live in a habitat like this? | Who were the first explorers of space? | Where in the world would you like to live? |
| Area of Computing | Computer systems and networks | Data and information | Programming | Creating media (Photo and video) | Programming | Creating media (Audio) |
| Unit | Information technology around us | Pictograms | Robot algorithms | Digital photography | Programming quizzes | Digital music |
| Builds On | **Year:** 1<br>**Term:** Autumn 1<br>**Unit:** Technology around us | **Year:** 1<br>**Term:** Spring 2<br>**Unit:** Grouping data | **Year:** 1<br>**Term:** Summer 2<br>**Unit:** Programming animations | **Year:** 1<br>**Term:** Summer 1<br>**Unit:** Digital painting | **Year:** 2<br>**Term:** Spring 1<br>**Unit:** Programming – Robot algorithms | **Year:** 2<br>**Term:** Spring 2<br>**Unit:** Creating media (photo and video) Digital photography |
| Memory Master | | | | | | |
| Overview | Identifying IT and how its responsible use improves our world in school and beyond. | Collecting data in tally charts and using attributes to organise and present data on a computer. | Creating and debugging programs, and using logical reasoning to make predictions. | Capturing and changing digital photographs for different purposes. | Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz. | Using a computer as a tool to explore rhythms and melodies, before creating a musical composition. |
| Unit Vocabulary | Information technology (IT), computer, barcode, scanner/scan | more than, less than, most, least, common, popular, organise, data, object, tally chart, votes, total, pictogram, enter, data, compare, objects, count, explain, attribute, group, same, different, conclusion, block diagram, sharing | instruction, sequence, clear, unambiguous, algorithm, program, order, prediction, artwork, design, route, mat, debugging, decomposition | device, camera, photograph, capture, image, digital, landscape, portrait, framing, subject, compose, light sources, flash, focus, background, editing, filter, format, framing, lighting | sequence, command, program, run, start, outcome, predict, blocks, design, actions, sprite, project, modify, change, algorithm, build, match, compare, debug, features, evaluate, decomposition, code | music, quiet, loud, feelings, emotions, pattern, rhythm, pulse, pitch, tempo, rhythm, notes, create, emotion, beat, instrument, open, edit |
| Lesson Sequence | 1. I can recognise the uses and features of information technology.<br>2. I can identify the uses of information technology in the school.<br>3. I can identify information technology beyond school.<br>4. I can explain how information technology helps us.<br>5. I can explain how to use information technology safely.<br>6. I can recognise that choices are made when | 1. I can recognise that we can count and compare objects using tally charts.<br>2. I can recognise that objects can be represented as pictures.<br>3. I can create a pictogram.<br>4. I can select objects by attribute and make comparisons.<br>5. I can recognise that people can be described by attributes. | 1. I can describe a series of instructions in a sequence.<br>2. I can explain what happens when we change the order of instructions.<br>3. I can predict the outcome of a program.<br>4. I can explain that programming projects can have code and artwork.<br>5. I can design an algorithm. | 1. I can use a digital device to take a photograph.<br>2. I can make choices when taking a photograph.<br>3. I can describe what makes a good photo.<br>4. I can decide how photographs can be improved.<br>5. I can use tools to change an image.<br>6. I recognise that photos can be changed. | 1. I can explain that a sequence of commands has a start.<br>2. I can explain that a sequence of commands.<br>3. I can create a program using a given design.<br>4. I can change a given design.<br>5. I can create a program using my own design.<br>6. I can decide how my project can be improved. | 1. I can say how music can make us feel.<br>2. I can identify that there are patterns in music.<br>3. I can experiment with sound using a computer.<br>4. I can use a computer to create a musical pattern.<br>5. I can create music for a purpose.<br>6. I can review and refine our computer work. |

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| | using information technology. | 6. I can explain that we can present information using a computer. | 6. I can create and debug a program that I have written, | | | |
| **Critical Knowledge and Understanding** | **Knowledge:**<br>Know information technology is anything that is or works with a computer and can give examples.<br>Know that some devices allow you to communicate through messages and video calls and others do not, but they are all IT.<br>Know that devices can be used in different places e.g. a shop or outdoors.<br>Know that IT can be portable and can be taken to other locations.<br>Know what barcodes are and that they hold information about a product.<br>Know that passwords should not be shared.<br>Know that there are activities you can do on IT as well as in real-life e.g. painting, playing games. | **Knowledge:**<br>Know what a tally chart is and how to use one.<br>Know what a pictogram is and how to use one.<br>Can interpret simple tally charts and pictograms.<br>Can create simple tally charts and pictograms.<br>Know how to use different attributes to classify.<br>Know what a block diagram is. | **Knowledge:**<br>Understand a series of instructions<br>Understand different algorithms by changing the sequence of commands<br>Predict what a sequence of commands will do<br>**Implementation:**<br>Follow sequences of instructions including moving forwards and backwards and turning left and right.<br>Plan a series of instructions for someone else to follow<br>Plan a mat layout with several possible routes<br>Plan and execute a program to reach a goal and debug as needed<br>**Evaluation:**<br>Evaluate how successful they were in meeting the task requirements | **Knowledge:**<br>Explain some aspects of taking a good photograph<br>Know that a photo can be portrait or landscape<br>**Implementation:**<br>Take a photograph using a simple camera or device that has been set up in camera mode<br>Identify some of the reasons why a photograph may be good or bad<br>Experiment when taking photos with different light sources<br>Identify a photo that has been enhanced using tools when asked questions<br>Use different tools to change how a photograph looks<br>**Evaluation:**<br>Evaluate how successful they were in meeting the task requirements | **Knowledge:**<br>Know that a sequence can be started using a variety of event blocks<br>Know that a sequence has an outcome, and identify different programs that have the same outcome<br>Know the backgrounds can be changed through the programming blocks<br>Understand the role of the numbers on ScratchJr blocks<br>**Implementation:**<br>Write and run a simple program with a start block, and an end block which changes the background<br>Adapt a given design to create a program with multiple sprites and backgrounds which uses the blocks given in the example<br>Create and program a quiz with at least two backgrounds which switch based on an action<br>Identify errors in their program, and debug them<br>**Evaluation:**<br>Test a program created and evaluate how successful it has been<br>Identify how closely a plan matches the outcome | **Knowledge:**<br>Reflect on a piece of music<br>Follow a rhythm pattern<br>Understand that a computer can generate different sounds<br>Understand that a computer can be used to make a sequence of notes<br>Understand how pattern and rhythm can be used to depict an animal<br>**Implementation:**<br>Create and follow a rhythm pattern using two different instruments<br>Use the computer to generate different sounds represented by images<br>Create a sequence of notes on the computer and start to refine them<br>Create a sequence of notes that use rhythm and tempo to link with a chosen animal, refining their work<br>**Evaluation:**<br>Evaluate how successful they were in meeting the task requirements |
| Natterhub | Balance it<br>Question it | Feel it | Secure it | Chat it | Think it | Learn it<br>Mind it |
| **Additional Online Safety through PSHE Curriculum** | | | Safer Internet Day | Brook - Sharing photos online<br>Brook - Online interactions and information sharing | | |

| Year 3 | | | | | | |
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| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| Topic Question | What do I need to make my body move? | How did the Romans change Britain? | What is King Henry VIII remembered for? | How did Britain change during prehistory? | What is there to discover in North America? | What are the key geographical features of the United Kingdom? |
| Area of Computing | Data and information | Computer systems and networks | Programming | Creating media (Graphics / Photo and video) | Programming | Creating media (Text) |
| Unit | Branching databases | Connecting computers | Sequencing sounds | Stop-frame animation | Events and actions in programs | Desktop publishing |
| Builds On | **Year:** 2<br>**Term:** Autumn 2<br>**Unit:** Pictograms | **Year:** 2<br>**Term:** Autumn 1<br>**Unit:** Information technology around us | **Year:** 2<br>**Term:** Summer 1<br>**Unit:** Programming quizzes | **Year:** 2<br>**Term:** Summer 2<br>**Unit:** Digital music | **Year:** 3<br>**Term:** Spring 1<br>**Unit:** Programming – Events and actions in programs | **Year:** 3<br>**Term:** Spring 2<br>**Unit:** Creating media (graphics / photos and media) Stop-frame animation |
| Memory Master | | | | | | |
| Overview | Building and using branching databases to group objects using yes/no questions. | Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks. | Creating sequences in a block-based programming language to make music. | Capturing and editing digital still images to produce a stop frame animation that tells a story | Writing algorithms and programs that use a range of events to trigger sequences of actions. | Creating documents and modifying text, images and page layouts for a specific purpose. |
| Unit Vocabulary | attribute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree | digital device, input, process, output, program, digital, non-digital, connection, network, switch, server, wireless access point, cables, sockets | Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, sequence, event, task, design, run the code, order, note, chord, algorithm, bug, debug, code | animation, flip book, stop-frame, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, import, transition | motion, event, sprite, algorithm, logic, move, resize, extension block, pen up, set up, pen, design, action, debugging, errors, setup, code, test, debug, actions. | text, images, advantages, disadvantages, communicate, font, style, landscape, portrait, orientation, placeholder, template, layout, content, desktop publishing, copy, paste, purpose, benefits |
| Lesson Sequence | 1. I can create questions with yes/no answers.<br>2. I can identify the attributes needed to collect data about an object.<br>3. I can create a branching database.<br>4. I can explain why it is helpful for a database to be well structured. | 1. I can explain how digital devices function.<br>2. I can identify input and output devices.<br>3. I can recognise how digital devices can change the way that we work.<br>4. I can explain how a computer network can be used to share information. | 1. I can explore a new programming environment.<br>2. I can identify that commands have an outcome,<br>3. I can explain that a program has a start.<br>4. I can recognise that a sequence of commands can have an order. | 1. I can explain that animation is a sequence of drawings or photographs.<br>2. I can relate animated movement with a sequence of images.<br>3. I can plan an animation.<br>4. I can identify the need to work consistently and carefully. | 1. I can explain how a sprite moves in an existing project.<br>2. I can create a program to move a sprite in four directions.<br>3. I can adapt a program to a new context.<br>4. I can develop my program by adding features.<br>5. I can identify and fix bugs in a program. | 1. I can recognise how text and images convey information.<br>2. I recognise that text and layout can be edited.<br>3. I can choose appropriate page settings.<br>4. I can add content to a desktop publishing publication.<br>5. I can consider how different layouts can suit different purposes. |

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| | 5. I can plan the structure of a branching database.<br>6. I can create an identification tool. | 5. I can explore how digital devices can be connected.<br>6. I can recognise the physical components of a network. | 5. I can change the appearance of my project.<br>6. I can create a project from a task description. | 5. I can review and improve my animation.<br>6. I can evaluate the impact of adding other media to an animation. | 6. I can design and create a maze-based challenge. | 6. I can consider the benefits of desktop publishing. |
| **Critical Knowledge and Understanding** | **Knowledge:**<br>Know what a branching database is and that answers need to be yes/no and not quantities.<br>Know the term attributes and identify common attributes in groups.<br>Decide how to group objects based on attributes.<br>Know where to place objects based on their attributes.<br>Identify mistakes in branching databases.<br>Know where headings would fit. | **Knowledge:**<br>Know the terms input and output.<br>Know that a process takes place from an input which results in an output.<br>Know what a digital device is and can give examples e.g. a lamp or a laptop.<br>Know what an input device is and can give examples e.g. a microphone.<br>Know what an output device is and can give examples e.g. a monitor,<br>Know what an input and output device is and can give examples e.g. a touchscreen.<br>Know a network switch directs information between computers.<br>Know that saving on a server is useful for sharing work and a printer on a network means this can also be shared.<br>Know that without a wireless access point, wireless devices cannot connect to the network.<br>Know that personal information should not be include in passwords. | **Design:**<br>Choose a name that describes the action of the sprite<br>Choose relevant backdrops and costumes<br>Create an algorithm for each sprite<br>Explain what sequence means and demonstrate it in an algorithm<br>**Code:**<br>Adapt their code for additional named sprites<br>Explain why the code is in that particular sequence<br>**Running the code:**<br>Run their code and identify if it meets the requirements of the task<br>**Evaluate:**<br>Evaluate how successful they were in meeting the task requirements | **Design:**<br>Storyboard has a clear beginning, middle, and end<br>**Implementation:**<br>Movement is smooth<br>The animation follows the storyboard<br>Make some improvements<br>Add some additional media<br>**Evaluation:**<br>Evaluate how successful they were in meeting the task requirements | **Knowledge:**<br>Know that an event causes an action and that commands have values associated with them.<br>Know that a setup code resets the game.<br>Can relate the coding stage to the outcome of a project when the code is run.<br>Can recognise the difference in functions e.g. go to and move blocks.<br>Can associate an outcome with a command.<br>Can read codes and recognise errors.<br>Know which code sequence describes and algorithm. | **Design:**<br>Choose an appropriate layout for a given scenario<br>**Implementation:**<br>Use placeholders appropriately to divide the page (magazine)<br>Add text and images<br>Format some of the text<br>**Evaluation:**<br>Evaluate how successful they were in meeting the task requirements |
| **Natterhub** | Balance it<br>Question it | Feel it | Secure it | Chat it | Think it | Learn it<br>Mind it |

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| **Additional Online Safety through PSHE Curriculum** | | | Safer Internet Day | Brook - The Internet and everyday life | | |

| Year 4 | | | | | | |
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| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| Topic Question | Were the Dark Ages dark? | Where does my food go? | Are dragons real? | Should all crimes be punished? | How does the Amazon Rainforest matter to us? | What makes St Dennis, St Dennis? |
| | Computer systems and networks | Programming | Creating media (Graphics / Photo and video) | Creating media (Audio) | Data and information | Programming |
| Unit | The Internet | Repetition in shapes | Photo editing | Audio production | Data logging | Repetition in games |
| Builds On | **Year:** 3<br>**Term:** Autumn 2<br>**Unit:** Connecting computers | **Year:** 3<br>**Term:** Summer 1<br>**Unit:** Events and actions in programs | **Year:** 3<br>**Term:** Summer 2<br>**Unit:** Desktop publishing | **Year:** 4<br>**Term:** Spring 1<br>**Unit:** Photo editing | **Year:** 3<br>**Term:** Autumn 1<br>**Unit:** Data and information – Branching databases | **Year:** 4<br>**Term:** Autumn 2<br>**Unit:** Programming - Repetition in shapes |
| Memory Master | Describe the physical components of a network and how digital devices can be connected. | | | | | |
| Overview | Recognising that the internet is a network of networks including the WWW, and why we should evaluate online content. | Using a text-based programming language to explore count-controlled loops when drawing shapes. | Manipulating digital images, and reflecting on the impact of the changes and whether the required purpose is fulfilled, | Capturing and editing audio to produce a podcast, ensuring that copyright is considered. | Recognising how and why data is collected over time, before using data loggers to carry out an investigation, | Using a block-based Programming language to explore count-controlled and infinite loops when creating a game. |
| Unit Vocabulary | Internet, network, router, security, switch, server, wireless access point (WAP), website, web page, web address, routing, web browser, World Wide Web, content, links, files, use, download, sharing, ownership, permission, information, accurate, honest, content, adverts | Logo (programming environment), program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure | image, edit, digital, crop, rotate, undo, save, adjustments, effects, colours, hue, saturation, sepia, vignette, image, retouch, clone, select, combine, made up, real, composite, cut, copy, paste, alter, background, foreground, zoom, undo, font | audio, microphone, speaker, headphones, input device, output device, sound, podcast, edit, trim, align, layer, import, record, playback, selection, load, save, export, MP3, evaluate, feedback | data, table, layout, input device, sensor, logger, logging, data point, interval, analyse, dataset, import, export, logged, collection, review, conclusion | Logo (programming environment), program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure |
| Lesson Sequence | 1. I can describe how networks physically connect to other networks.<br>2. I can recognise how networked devices make up the Internet.<br>3. I can outline how websites can be shared via the World Wide Web (WWW).<br>4. I can describe how content can be added | 1. I can identify the accuracy in programming is important.<br>2. I can create a program in a text-based language.<br>3. I can explain what 'repeat' means.<br>4. I can modify a count-controlled loop to produce a given outcome. | 1. I can explain that the composition of digital photos can be changed.<br>2. I can explain that colours can be changed in digital images.<br>3. I can explain how cloning can be used in photo editing.<br>4. I can explain that images can be combined.<br>5. I can combine images for a purpose. | 1. I can identify that sound can be recorded.<br>2. I can explain the different parts of creating a podcast project.<br>3. I can recognise the different parts of creating a podcast project.<br>4. I can apply audio editing skills independently. | 1. I can explain that data gathered over time can be used to answer questions.<br>2. I can use a digital device to collect data automatically.<br>3. I can explain that a data logger collects 'data points' from sensors over time. | 1. I can develop the use of count-controlled loops in a different programming environment.<br>2. I can explain that in programming there are infinite loops and count-controlled loops.<br>3. I can develop a design that includes two or more loops which run at the same time. |

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| | and accessed on the World Wide Web (WWW).<br>5. I can recognise how the content of the WWW is created by people.<br>6. I can evaluate the consequences of unreliable content. | 5. I can decompose a task into small steps.<br>6. I can create a program that uses count-controlled loops to produce a given outcome. | 6. I can evaluate how changes can improve an image. | 5. I can combine audio to enhance my podcast project.<br>6. I can evaluate the effective use of audio. | 4. I can recognise how a computer can help us analyse data.<br>5. I can identify the data needed to answer questions.<br>6. I can use data from sensors to answer questions. | 4. I can modify an infinite loop in a given program.<br>5. I can design a project that includes repetition.<br>6. I can create a project that includes repetition. |
| **Critical Knowledge and Understanding** | **Knowledge:**<br>Know the internet is a global network of networks.<br>Know the purpose of routers is to connect networks together, send information around the internet and choose the quickest route for information.<br>Know that sounds and sights can be shared on the World Wide Web.<br>Know common domains and websites e.g. .gov/.sch.uk/.com etc<br>Know common browsers e.g. Chrome, Edge, Firefox<br>Know that some websites let you create content and some let you listen or view content.<br>Know that copyright is owned by the creator of material and that others cannot use this as their own. | **Knowledge:**<br>Know what a repeated pattern is, even if there are two parts to this.<br>Know how the repeat structure works and the sequence will run to the bottom before it loops around.<br>Know the importance of the value being attached to the command.<br>Recognise a count-controlled loop and understand it must contain repeat command.<br>Can match codes to algorithms.<br>Know that to draw shapes, codes are repeated e.g. 6 times for a hexagon as it has 6 sides. | **Design:**<br>Identify the types of image needed in relation to their chosen theme<br>Outline how the images will be used together<br>Suggest colours and effects that might suit their scene<br>**Implementation:**<br>Select images and combine them into one<br>Use a range of tools to create their image<br>Add relevant text to their publication<br>**Evaluation:**<br>Evaluate how successful they were in meeting the task requirements | **Design:**<br>Explain the key information that the podcast will include<br>Identify the types of sound that will be included<br>Include intro, main content, and outro sections in the plan<br>**Implementation:**<br>Voice recordings are clear and relevant<br>Appropriate audio is imported<br>Use editing tools to remove some unneeded sounds or pauses<br>Additional audio is appropriately placed to play alongside the voice recording<br>Appropriate volume is set on all tracks<br>**Evaluation:**<br>Evaluate how successful they were in meeting the task requirements | **Asking questions:**<br>Suggests questions that require data from at least one sensor to answer them<br>Suggests questions that require data to be collected over time to answer them<br>**Collecting data:**<br>Identifies a suitable time frame to collect data to answer their question<br>Identifies where the data logger needs to be placed to answer their question<br>Identifies which sensor(s) needs to be used to answer their question<br>**Viewing data:**<br>Uses software to view relevant data<br>Recognises how some data points are different<br>**Findings:**<br>Makes statements about what their data shows<br>Uses their collected data to answer their question | **Design:**<br>Choose relevant sprites and backdrops for a game<br>Create an algorithm that includes show, hide, and move blocks<br>Create an algorithm that includes relevant sound blocks<br>**Code:**<br>Create additional sprites and copy code over to those sprites<br>Modify their code for additional sprites<br>**Running the code:**<br>Run their code and identify whether it meets the requirements of the task<br>**Evaluation:**<br>Evaluate how successful they were in meeting the task requirements |
| **Natterhub** | Balance it<br>Question it | Feel it | Secure it | Chat it | Think it | Learn it<br>Mind it |
| **Additional Online Safety through PSHE Curriculum** | | | Safer Internet Day | Brook - Safely enjoying the online world<br>Brook - Keeping personal information safe and private online | | |

| Year 5 | | | | | | |
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| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| Topic Question | What lies beyond our Earth? | What is life like in different climate zones? | What impact did the Industrial Revolution have on Cornish tin mining? | When and why did the Maya disappear? | Where can we see the influence of Ancient Greece today? | How do rivers impact the lives of people around the world? |
| Area of Computing | Computer systems and networks | Data and information | Programming | Creating media (Photo and video / Audio) | Creating media (Graphics) | Programming |
| Unit | Systems and searching | Flat-file databases | Selection in physical computing | Video production | Vector graphics | Selection in quizzes |
| Builds On | **Year:** 4<br>**Term:** Autumn 1<br>**Unit:** The internet | **Year:** 4<br>**Term:** Summer 1<br>**Unit:** Data logging | **Year:** 4<br>**Term:** Summer 2<br>**Unit:** Repetition in games | **Year:** 4<br>**Term:** Spring 2<br>**Unit:** Audio production | **Year:** 5<br>**Term:** Spring 2<br>**Unit:** Creating media (photo and video / audio) – Video production | **Year:** 5<br>**Term:** Spring 1<br>**Unit:** Programming - Selection in physical computing |
| Memory Master | What is the internet? What are domains, websites and browsers? How can sites be used? What is copyright? | | | | | |
| Overview | Recognising IT systems in the world and how some can enable searching on the internet. | Using a database to order data and create charts to answer questions. | Exploring conditions and selection using a programmable microcontroller. | Planning, capturing, and editing video to produce a short film. | Creating images in a drawing program by using layers and groups of objects. | Exploring selection in programming to design and code an interactive quiz. |
| Unit Vocabulary | system, connection, digital, input, process, storage, output, search, search engine, refine, index, bot, ordering, links, algorithm, search engine optimisation (SEO), web crawler, content creator, selection, ranking | database, data, information, record, field, sort, order, group, search, value, criteria, graph, chart, axis, compare, filter, presentation | database, data, information, record, field, sort, order, group, search, value, criteria, graph, chart, axis, compare, filter, presentation | video, audio, camera, talking head, panning, close up, video camera, microphone, lens, mid-range, long shot, moving subject, side by side, angle (high, low, normal), static, zoom, pan, tilt, storyboard, filming, review, import, split, trim, clip, edit, reshoot, delete, reorder, export, evaluate, share | vector, drawing tools, object, toolbar, vector drawing, move, resize, colour, rotate, duplicate/copy, zoom, select, align, modify, layers, order, copy, paste, group, ungroup, reuse, reflection | selection, condition, true, false, count-controlled loop, outcomes, conditional statement, algorithm, program, debug, question, answer, task, design, input, implement, test, run, setup, operator |
| Lesson Sequence | 1. I can explain that computers can be connected together to form systems.<br>2. I can recognise the role of computer systems in our lives.<br>3. I can identify how to use a search engine. | 1. I can use a form to record information.<br>2. I can compare paper and computer-based databases.<br>3. I can outline how you can answer questions by grouping and then sorting data. | 1. I can control a simple circuit connected to a computer.<br>2. I can write a program that includes count-controlled loops.<br>3. I can explain that a loop can stop when a condition is met. | 1. I can explain what makes a video effective.<br>2. I can use a digital device to record video.<br>3. I can capture video using a range of techniques.<br>4. I can create a storyboard. | 1. I can identify that drawing tools can be used to produce different outcomes.<br>2. I can create a vector drawing by combining shapes.<br>3. I can use tools to achieve a desired effect. | 1. I can explain how selection is used in computer programs.<br>2. I can relate that a conditional statement connects a condition to an outcome.<br>3. I can explain how selection directs the flow of a program. |

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| | 4. I can describe how search engines select results.<br>5. I can explain how search results are ranked.<br>6. I can recognise why the order of results is important, and to whom. | 4. I can explain that tools can be used to select specific data.<br>5. I can explain that computer programs can be used to compare data visually.<br>6. To use a real-world database to answer questions. | 4. I can explain that a loop can be used to repeatedly check whether a condition has been met.<br>5. I can design a physical project that includes selection.<br>6. I can create a program that controls a physical computing project. | 5. I can identify that video can be improved through reshooting and editing.<br>6. I can consider the impact of the choices made when making and sharing a video. | 4. I can recognise that vector drawings consist of layers.<br>5. I can group objects to make them easier to work with.<br>6. I can apply what I have learnt about vector drawings. | 4. I can design a program that uses selection.<br>5. I can create a program that uses selection<br>6. I can evaluate my program. |
| Critical Knowledge and Understanding | **Knowledge:**<br>Know that computers accept inputs, processes them and then produce outputs and know this as IPO model.<br>Know that computer systems can use sensors e.g. automatic doors.<br>Know that search engines offer browsers which help you to find websites.<br>Know that different search engines select results based on the index of that particular search engine, so results differ. They have different indices.<br>Know that a search engine uses web crawlers to create an index of webpages.<br>Know the more specific the search term is, the less results would be returned e.g. car / red car / red sports car.<br>Know that selection explains which webpages a search engine displays; ranking explains the order in which they appear. | **Knowledge:**<br>Know that computer databases allow us to organise, search and sort data.<br>Know that a database record is represented as a row in a database table.<br>Know that each record contains multiple fields, which are columns in the table holding specific pieces of information.<br>Can use a table view of a database to answer simple questions using the field explain how data has been sorted.<br>Know the difference between AND and OR searches and what results they would return.<br>Know how fields can be used to produce graphs.<br>Explain when using a database, whether a chart view or table view is most useful in specific situations.<br>Recognise fields that would be important and useful to record. | **Design:**<br>Construct a wiring diagram to show how components will be connected<br>Build a model that supports the hardware that will be used in the task<br>Write an algorithm that uses selection to control a sequence using output devices<br>**Code:**<br>Combine appropriate blocks to implement their algorithm<br>Suggest a strategy to fix the code when it is not working<br>**Running the code:**<br>Test their code with their model<br>**Evaluation:**<br>Evaluate how successful they were in meeting the task requirements | **Design:**<br>Show sequence and progression with a clear beginning, middle, and end<br>**Implementation:**<br>Use appropriate filming techniques and capture the scenes from the storyboard<br>Captured audio is clear<br>Edit the video to join scenes, matching the storyboard<br>**Evaluation:**<br>Evaluate how successful they were in meeting the task requirements | **Design:**<br>Choose an item in the classroom and consider how it's relevant to the task<br>**Implementation:**<br>Add and remove objects to create a drawing of a chosen artefact<br>Use copy and paste to maintain consistency within the drawing<br>Manipulate an object's size, colour, and proportion to represent a chosen artefact<br>Purposefully position and rotate objects<br>Move objects to different layers to create a specific aspect of a drawing<br>Manipulate multiple objects concurrently<br>Group objects to make them easier to work with<br>**Evaluation:**<br>Evaluate how successful they were in meeting the task requirements | **Knowledge:**<br>Know that selection in programming is used to allow the program to flow in different directions.<br>Can differentiate between programs that uses condition program and programs that use conditions as part of a selection.<br>Understand that when using selection in the structure of 'if… then… else…', if the answer is false, the 'else' command will run.<br>Identify where conditions are used in a program.<br>Know that programs that include selection in the 'if… then… else…' structure will, when used within an infinite loop, repeatedly check if the condition is true or false and carry out the appropriate outcome.<br>Know that computers do not know whether an answer is wrong or right and therefore rely on the programmer to write the program correctly. |
| Natterhub | Balance it | Feel it | Secure it | Chat it | Think it | Learn it |

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| | Question it | | | | | Mind it |
| **Additional Online Safety through PSHE Curriculum** | | | Safer Internet Day | Brook - Online friendships and keeping safe<br>Brook – Skills for using the internet safely | Brook – Social media | |

| Year 6 | | | | | | |
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| | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **Topic Question** | Why is Earth so angry? | How was the Battle of Britain a turning point in WWII? | Do we agree with Darwin's theory of evolution? | What were the Ancient Egyptian's most significant achievements? | Who was really responsible for the sinking of the Titanic? | Why is the fishing industry so important to local communities? |
| **Are of Computing** | Computer systems and networks | Creating media (Graphics) | Data and information | Programming | Programming | Creating media (Text) |
| **Unit** | Communication and collaboration | 3D modelling | Introduction to spreadsheets | Variables in games | Sensing in physical computing | Webpage creation |
| **Builds On** | **Year:** 5<br>**Term:** Autumn 1<br>**Unit:** Systems and searching | **Year:** 5<br>**Term:** Summer 1<br>**Unit:** Vector graphics | **Year:** 5<br>**Term:** Autumn 2<br>**Unit:** Flat-file databases | **Year:** 5<br>**Term:** Summer 2<br>**Unit:** Selection in quizzes | **Year:** 6<br>**Term:** Spring 2<br>**Unit:** Programming – Variables in games | **Year:** 6<br>**Term:** Autumn 2<br>**Unit:** Creating media (graphics) -- 3D modelling |
| **Memory Master** | What does IPO mean? How do search engines select results? How do they use ranking? | | | | | |
| **Overview** | Exploring how data is transferred by working collaboratively online. | Planning, developing, and evaluation 3D computer models of physical objects. | Answering questions by using spreadsheets to organise and calculate data. | Exploring variables when designing and coding a game. | Designing and coding a project that captures inputs from physical devices. | Designing and creating webpages, giving consideration to copyright, aesthetics and navigation. |
| **Unit Vocabulary** | communication, protocol, data, address, Internet Protocol (IP), Domain Name Server (DNS), packet, header, data payload, chat, explore, slide deck, reuse, remix, collaboration, internet, public, private, one-way, two-way, one-to-one, one-to-many | TinkerCAD, 2D, 3D, shapes, select, move, perspective, view, handles, resize, lift, lower, recolour, rotate, duplicate, group, cylinder, cube, cuboid, sphere, cone, prism, pyramid, placeholder, hollow, choose, combine, construct, evaluate, modify | data, collecting, table, structure, spreadsheet, cell, cell reference, data item, format, formula, calculation, spreadsheet, input, output, operation, range, duplicate, sigma, propose, question, data set, organised, chart, evaluate, results, sum, comparison, software, tools | variable, change, name, value, set, design, event, algorithm, code, task, artwork, program, project, code, test, debug, improve, evaluate, share, assign, declare | Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, if then else, variable, random, sensing, accelerometer, value, compass, direction, navigation, design, task, algorithm, step counter, plan, create, code, test, debug | website, web page, browser, media, Hypertext Markup Language (HTML), logo, layout, header, media, purpose, copyright, fair use, home page, preview, evaluate, device, Google Sites, breadcrumb trail, navigation, hyperlink, subpage, evaluate, implication, external link, embed |
| **Lesson Sequence** | 1. I can explain the importance of internet addresses. | 1. I can recognise that you can work in three | 1. I can create a data set in a spreadsheet. | 1. I can define a variable as something that is changeable. | 1. I can create a program to run on a controllable device. | 1. I can review an existing website and consider its structure. |

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| | 2. I can recognise how data is transferred across the internet.<br>3. I can explain how sharing information online can help people to work together.<br>4. I can evaluate different ways of working together online.<br>5. I can recognise how we communicate using technology.<br>6. I can evaluate different methods of online communication. | dimensions on a computer.<br>2. I can identify that digital 3D objects can be modified.<br>3. I can recognise that objects can be combined in a 3D model.<br>4. I can create a £D model for a given purpose.<br>5. I can plan my own 3D model.<br>6. I can create my own digital 3D model. | 2. I can build a data set in a spreadsheet.<br>3. I can explain that formulas can be used to produce calculated data.<br>4. I can apply formulas to data.<br>5. I can create a spreadsheet to plan an event.<br>6. I can choose suitable ways to present data. | 2. I can explain why a variable is used in a program.<br>3. I can choose how to improve a game by using variables.<br>4. I can design a project that builds on a given example.<br>5. I can use my design to create a project.<br>6. I can evaluate my product. | 2. I can explain that selection can control the flow of a diagram.<br>3. I can update a variable with a user input.<br>4. I can use a conditional statement to compare a variable to a value.<br>5. I can design a project that uses inputs and outputs on a controllable device.<br>6. I can develop a program to use inputs and outputs on a controllable device. | 2. I can plan the features of a web page.<br>3. I can consider the ownership and use of images (copyright).<br>4. I recognise the need to preview pages.<br>5. I can outline the need for a navigation path.<br>6. I recognise the implications of linking to content owned by other people. |
| **Critical Knowledge and Understanding** | **Knowledge:**<br>Know that all data transferred over the internet is broken down into packets.<br>Know that protocols are an agreed method of communication.<br>Know that addresses are needed for packets to reach their destinations, but they are contained in the header of a packet.<br>Know that an IP address directs a packet to its destination.<br>Know a router connects multiple devices to the internet and manages data flow between them.<br>Know that data is split into small packages to be sent and once they reach their destination, they go no further and are reassembled into their original form.<br>Know the best ways to share different information. | **Design:**<br>Explain shapes that are representative of a real-world object to make a model<br>Recognise that changing perspective does not change the position of objects<br>**Implementation:**<br>Position 3D objects to create a chosen artefact<br>Accurately resize objects<br>Create holes in objects<br>Use and combine variations of one 3D shape<br>**Evaluation:**<br>Evaluate how successful they were in meeting the task requirements | **Knowledge:**<br>Know that calculations can be used on any data type in spreadsheets.<br>Know that subheadings help find appropriate values.<br>Know how simple formulas work in a spreadsheet.<br>Know what the SUM function is and can use this.<br>Can choose the best way to present information and explain why. | **Knowledge:**<br>Know that important features of a variable are that it can be set, can be changed and has a clear name.<br>Know that a variable can hold both numbers or letters.<br>Know that a variable can only hold one value at any one time.<br>Know that when a variable is changed it is replaced by a new value.<br>Know the aspects of a program that can be set and changed with variables e.g. points scored, loves lost or time left. Not movement of a sprite or appearance of a stage.<br>Know that variables should not include a space and contain enough information to be identified.<br>Know the value of a variable is usually set at the beginning of a program. | **Design**<br>Identify what will be displayed and how the user will see it<br>Choose an appropriate name for a variable<br>Choose when and where to set a variable<br>Create an algorithm to describe how the program will process each input<br>**Code**<br>Combine appropriate blocks to implement their algorithm<br>**Running the code**<br>Run their code on the emulator to test their program<br>Propose a strategy to fix the code if it is not working<br>Evaluation<br>Evaluate how successful they were in meeting the task requirements | **Design decisions:**<br>Layout contains multiple sections<br>Layout relates to a relevant purpose/audience<br>Use copyright-free images<br>Design is clear and organised<br>**Implementation:**<br>Add subpages<br>Add internal and external hyperlinks<br>Suggest some improvements<br>Design considers how the page will look on different devices<br>**Evaluation:**<br>Evaluate how successful they were in meeting the task requirements |
| **Natterhub** | Balance it | Feel it | Secure it | Chat it | Think it | Learn it |

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| | Question it | | | | | Mind it |
| **Additional Online Safety through PSHE Curriculum** | | | | Online friendships and keeping safe<br><br>Skills for using the Internet safely | | |