Computing in Early Years Foundation Stage

	Computer Science	Information Technology	Digital Literacy
Relevat ELG	**ELG: Listening, attention and understanding** Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions. Key Learning Outcome • Follow instructions on how to use a Bee Bot, tablet or computer appropriately **ELG: PSED** Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. Key Learning Outcome • To input one given set of simple instructions to program a Bee Bot e.g. forward, backward, left using symbol cards **ELG: Self-regulation** Set and work towards simple goals, being able to wait for what they want and control their immediate impulses when appropriate. Key Learning Outcome • Wait to take their turn • Ask for help when struggling to use a device • Control immediate impulses when frustrations arise during technology use e.g. an app isn't working. •	**ELG: Expressive arts and design** Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. **ELG: PSED** Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. **ELG: Physical** Use a range of small tools, including scissors, paintbrushes and cutlery. Begin to show accuracy and care when drawing. Key Learning Outcomes • To create an image using a paint program • To type text • To complete a game on an IPad	**ELG: PSED** Explain the reasons for rules, know right from wrong and try to behave accordingly. Key Learning Outcomes • To talk about factors which support their overall health. One of these being 'sensible amounts of screen time'. **ELG: People, culture and communities** Describe their immediate environment using knowledge from observation, discussion, stories, nonfiction texts and maps. **ELG: Expressive arts and design** Make use of props and materials when role playing characters in narratives and stories Key Learning Outcomes • Pupils may talk about family members and friends using devices for communication • Pupils may understand that phones, tablets and computers can be used for texting and different types of calls • Pupils may describe and/or re-enact their own personal experiences of communicating with devices

THE STOKE POGES SCHOOL

Computing Learning Journey

Key Stage 1 and 2 Computing Overview

In Key Stage 1 and Key Stage 2 we follow a yearly cycle. In line with the National Curriculum, all of the relevant POS will be taught by the end of the key stage.

Computing Overview						
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Autumn Term	**Programming A- Moving a robot** What is a robot?	**Computer systems and networks - Information technology around us** Does IT really make a difference?	**Computer systems and networks - Connecting computers** Why are networks so important?	**Computer systems and networks - The Internet** Is the internet and the WWW the same thing?	**Computer systems and networks - Systems and searching** How do search engines work?	**Computer systems and networks - Communication and collaboration** Are data packets the same as crisp packets?
	Creating media- Digital Painting How do I create a Digital picture?	**Programming A – Robot Algorithms** How do I program a robot to get it to do what I want?	**Creating media – Stop frame animation** How can I create an animation using a computer?	**Programming A – Repetition in shape** What does a Turtle know about computing?	**Programming A – Selection in physical computing** What are carousels and are they that complicated?	**Programming A – Variables in games** How do I make my games even better?
Spring Term	**Computer systems and networks - Technology around us** What is Technology?					
	Creating media – Digital Writing Isn't a computer keyboard old school?	**Creating media – Making Music** How do computers make music?	**Programming A – Sequencing sounds** What are sequences?	**Creating media – Audio production** Can I really create a podcast?	**Creating media – Video production** How difficult is it to make a movie?	**Creating media – Web page/Sway creation** How can I get information to a lot of people?
Summer Term	**Programming B – Into to Animation** How can I create my first animation?	**Programming B – Programming quizzes** How can I create a quiz in ScratchJr?	**Programming B – Events and actions in programs** How can I create a maze in Scratch?	**Programming B – Repetition in games** How easy is it to create a game in Scratch?	**Programming B – Selection in quizzes** How do I make my quiz more exciting?	**Programming B – Sensing** How can I make things happen?

THE STOKE POGES SCHOOL — Computing Learning Journey

Online Safety

Each unit links between the content of the lessons, the National Curriculum and the Education for a Connected World framework (https://www.gov.uk/government/publications/education-for-aconnected-world). The table below shows which units link to online safety or digital citizenship and which aspects of Education for a Connected World are covered within the Teach Computing Curriculum. Not all of the objectives in the framework are covered in the Teach Computing Curriculum, however, the coverage required for the computing national curriculum is provided.

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Eductiona for a Connected World Links					
Technology Around Us **Health, well-being and lifestyle** • Identify rules that help keep us safe and healthy in and beyond the home when using technology • Give some simple examples **Copyright and ownership** • Know that the work created belongs to them • Name their work so that others know it belongs to them **Digital Writing** **Privacy and security** • Give reasons why they should only share information with people they choose to and can trust	**IT Around Us** **Health, well-being and lifestyle** • Identify rules that help keep them safe and healthy beyond the home when using technology • Give some simple examples **Digital Music** **Copyright and ownership** • Know that work created belongs to them	**Stop-Frame Animation** **Managing online information** • Use key phrases in search engines • Use search technologies effectively **Copyright and ownership** • Explain why copying someone else's work from the internet without permission can cause problems • Give examples of what those problems might be • When seacrching on the internet for content to use, they can explain why they need to consider who owns it and whether they have the right to reuse it • Give some examples	**The Internet** **Managing online information** • Analyse information to make a judgement about probable accuracy, and understand why it is important to make their own decisions regarding content and that their decisions are respected by others • Explain what is meant by fake news, e.g. why some people will create stories or alter photographs and put them online to pretend something is true when it isn't • Describe ways of identifying when online content has been commercially sponsored or boosted (e.g. by commercial companies or by	**Systems and Searching** **Managing online information** • Be aware that a person's online activity, history or profile (their 'digital personality') will affect the type of information returned to them in a search or on a social media feed, and how this may be intended to influence their beliefs, actions and choices • Explain how search engine rankings are returned and can explain how they can be influenced (e.g. commerce, sponsored results)	**Communiation and Collaboration** **Copyright and ownership** • Describe and assess the benefits and the potential risks of sharing information online • Assess and justify when it is acceptable to use the work of others • Give examples of content that is permitted to be reused **Web Page Creation** **Online relationships** • Use the internet with adult support to communiate with people they know **Managing information Online**

		• Give examples of content that is permitted to be reused • Demonstrate the use of search tools to find and access online content which can be reused by others **<u>Desktop Publishing</u>** **Managing online information** • Use key phrases in search engines • Use search technologies effectively **Copyright and ownership** • When searching on the internet for content to use, they can explain why they need to consider who owns it and whether they have the right to reuse it • Demonstrate the use of search tools to find and access online content which can be reused by others	vioggers, content creators, or influencers) • Describe how fake news may affect someone's behaviour, and explain why this may be harmful **<u>Audio Production</u>** **Copyright and ownership** • Explain why copying someone else's work from the internet without permission can cause problems • Give examples of what thos problems might be • When searching on the internet for content to use, they can explain why they need to consider who owns it and whether they have the right to reuse it • Give some simple examples		**Online relationships** • Use the internet with adult support to communicate with people they know **Managing information online** • Navigate online content, websites, or social media feeds using more sophisticated tools to get to the information they want (e.g. menus, sitemaps, bread-crumb trails, site search functions) **Copyright and ownership** • Explain why copying someone else's work from the internet without permission can cause problems • Give examples of what those problems might be • When searching on the internet for content to use, they can explain why they need to consider who owns it and whether they have the right to reuse it • Give some simple examples • Assess and judstify when it is acceptable to use the work of others • Give examples of content that is

					permitted to be reused • Demonstrate the use of search tools to find and access online content which can be reused by others • Demonstrate how to make references to and acknowledge sources they have used from the internet • Explain the principles of fair use and apply this to cause studies

Computing systems and Networks					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Knowledge					
Technology Around Us • Identify technology in the classroom and how it helps us (DL) • Name the main parts of a computer (IT) • Identify rules to keep us safe and healthy when using technology (DL)	**IT Around Us** • Describe the uses of computers (DL) • Recognise different types of computers in school and understand that a computer is part of it (DL) • Explain how IT helps us (DL) • Identify rules for how to use IT safely (DL)	**Connecting Computers** • Explain that digital devices accept inputs and produce outputs (CS) • Explain how we use digital devices for different activities (DL) • Understand the similarities and differences between digital and non-digital tools (DL) • Discuss why we need a network switch (CS) • Explain how messages are passed through different connections (CS) • Demonstrate how information can be passed between devices (CS)	**The Internet** • Describe how networks connect to other networks • Recognise that the World Wide Web is part of the internet (DL) • Explain that the global interconnection of networks is the internet • Recognise the need for security on the internet • Describe how to access the World Wide Web and how information can be shared • Describe the types of content/media that can be added, created, and shared	**Systems and Searching** • Describe that a computer system features inputs, processes and outputs, recognising these features in large IT systems (CS) • Explain that computers are connected together to form IT sysmtes where data can be transferred (CS) • Recognise the role of web crawlers in creating an index (CS) • Relate a search term to the search engine's index (CS) • Explain how search results are selected and ranked to make	**Communiation and Collaboration** • Explain that data is transferred in packets (CS) • Recognise that data is transferred across networks using agreed protocols (methods) • Recognise that connected digital devices can allow us to access shared files stored online (CS) • Explain that networked digital devices have unique addresses (CS) • Discuss the opportunities that technology offers for communication and collaboration (DL)

		• Explain the role of a switch, server and wireless network point in a network (CS) • Identify how devices in a network are connecte together (CS) • Identify the benefits of computer networks (DL)	on the World Wide Web • Explain how the content of the World Wide Web is created, owned and shared by people • Explain that the internet enables us to view the World Wide Web which comprises of websites and web pages • Describe the benefits and current limitations of wprld Wide Web media • Explain why we should think carefully before sharing or resharing content (DL) • Explain why some information we find online migh not be honest, accurate or legal (DL)	them more useful (CS) • Explain why the order of results is important and to whom (CS)	• Compare different methods of communication over the internet (DL) • Recognise computers connected to the internet allow people in different places to work together which can be public or private • Understand that what they share may not be private (DL)
Skills					
• Switch on and log into a computer (IT) • Use a mouse to click and drag (IT) • Use a mouse to create a picture (IT) • Save work to a file (IT) • Type their name on a keyboard (IT) • Delete letters (IT) • Open work from a file (IT)	• Use the correct IT for different types of activities (IT) • Demonstrate how to use IT safely • Identify examples of IT in school and how we use it (IT) • Identify examples of IT beyond school and how we use it (DL)	• Classify input and output devices (CS) • Design their own digital device, using their knowledge of inputs and outputs • Identify networked devices around school		• Demonstrate that different search terms produce different results • Evaluate the results of search terms and refine as necessary • Compare results from different search engines (IT) • Complete a web search to find specific information	• Send information over the internet in different ways (IT) • Contribute to a shared project online (IT) • Choose methods of internet communication and collaboration to suit particular purposes (IT) • Decide what should and should not be shared online (DL)

• Use the arrow keys to move a cursor (IT)					

Programming					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Knowledge					
A – Moving a Robot • Explain what a given command does • Match a command to an outcome (CS) • Understand that a program is a set of commands that a computer can run • Recall that a series of instructions can be ussed before they are enacted • Explain what their program should do (CS)	**A – Robot Algorithms** • Describe a series of instructions as a sequence (CS) • Explain what happens when we change the order of instructions • Recognise that you can predict the outcome of a program	**A – Sequencing Sounds** • Explain that a sequence starts because of an input and what a sequence is • Identify that a program includes sequences of commands • Identify that the sequence of a program is a process	**A – Repetition in Shapes** • Explain that you can use a loop command in a program to repeat instructions • Explain that in programming there are indefinite loops and count-controlled loops • Explain that an indefinite loop will run until the program is stopped • Explain that you can program a loop to stop after a specific number of times	**A – Selection in Physical Commuting** • Identify a condition and an action in a project and that a condition can only be true or false (CS) • Relate that a count-controlled loop contains a condition • Compare a count-controlled loop with a condition-controlled loop • Explain that a condition-controlled loop will stop when a condition is met and a loop will complete a cycle before it stops	**A – Variables in Games** • Know that a variable is something that is changeable and can be used in a program (CS) • Define a program variable as a placeholder in memory for a single value • Explain that a variable has a name and a value that can be used by any program • Recognise that the value of a variable can be changed and updated or set as a cnstant (fixed value) (CS) • Identify that variables can hold numbers (integers) or letters (strings)
B- Programming Animation • Recognise how to run a command • Select commands for a given purpose • Predict the outcme of a command on a device	**B – Programming Quizzes** • Identify the start of a sequence and explain how to run the program (CS) • Predict the outcome of a sequence of commands (CS)	**B- Events and Actions in Programs** • Explain that the order of commands can affect a program's output • Identify that different sequences can achieve the same output or a different output	**B – Repetition in Games** • Justify when to use a loop and when not to • Recognise tools that enable more than one process to be run at the same time (concurrency) • Explore more than one programming environment (CS)	**B – Selection in Quizzes** • Identify the outcome of user input in an algorithm • Identify the setup code needed in their program (CS) • Explain that selection can be used to branch the flow of a program or to repeatedly check	**B – Sensing Movement** • Identfiy that variables can hold numbers (integers) or letters (strings) • Explain that there is only one value for a variable at any one time and, if read, the value remains

	• Decide which blocks to use to meet a design	• Explain the relationship between an event and an action (CS) • Identify how to improve a program	• Predict the outcome of snippets of code (CS) • Know when to use infinite or count-controlled loops (CS)	whether a condition has been met • Explain the importance of instruction order in 'if…then…else…' statements	• Explain that if you change the value of a variable, you cannot access the previous value (cannot undo) • Explain that the name of a variable needs to be unique and the name is meaningless to a computer.
Skills					
A – Moving a Robot • Predict the outcome of a command on a device including the use of forwards and backwards commands and a sequence involving up to 4 commands (CS) • List which commands can be used on a given device • Run a command on a floor robot (CS) • Choose a series of commands for a given purpose • Combine 4 direction commands to make a sequence (forwards, backwards, left and right) that can be run as a program (CS) • Run a program on a device	**A – Robot Algorithms** • Create a program using a given design (CS) • Run a program on a device • Use the same commands to create algorithms for a range of sequences (CS) • Use an algorithm to program a sequence on a floor robot (CS) • Trace a sequence to predict an outcomes (CS) • Identify routes around a map (CS) • Test a map to ensure it is usable (CS) • Create an algorithm to meet a goal (CS) • Use an algorithm to create a program (CS) • Test and debug each part of a program (CS)	**A – Sequencing Sounds** • Explore programming environments (e.g. Scratch) by identifying objects and commands (CS) • Follow a design to create a program (CS) • Create a sequence of connected commands (CS) • Start programs in different ways (CS) • Combine sound commands into a particular order (CS) • Build a sequence of commands (CS) • Make own design choices by assigning actions to sprites (CS) • Implement their algorithm as code (CS) • Create a project based on a task description (CS)	**A – Repetition in Shapes** • Program a computer by typing commands (CS) • Write an algorithm in text-based language (CS) • Use and modify a count-controlled loop and an indefinite loop to produce a given outcome (CS) • Use a procedure in a program (CS) • Design and create programs that include appropriate lopps to produce a given outcome (CS) • Create own or more sequences that run at the same time	**A – Selection in Physical Commuting** • Create a simple circuit and connect to a microcontroller (CS) • Connect more than 1 output component to a microcontroller (CS) • Use count-controlled loops to control outputs (CS) • Design a conditional loop (CS) • Program a microcontroller to respond to an input (CS) • Use selection to direct the flow of a program (CS) • Design a physical project that includes selection (CS) • Create a program (including testing and debugging) that includes a physical computing project (CS)	**A – Variables in Games** • Use events in a program to set variables (CS) • Create games that use variables (CS) • Test and debug projects that include variables (CS)

B- Programming Animation • Use more than 1 programming tool (CS) • Use commands to move a sprite (CS) • Run a program (CS) • Use a start block in a program (CS) • Use more than one block by joining them together (CS) • Change the value of a block (CS) • Add blocks to sprites (CS) • Delete sprites (CS) • Add more than 1 sprite to a project (CS) • Create algorithms for sprites (CS) • Test programs that they have created (CS)	**B – Programming Quizzes** • Change the outcome of a series of commands • Match 2 sequences with the same outcome (CS) • Build sequences of blocks • Select background, characters and images for their own or given designs • Create a program using their own design (CS) • Debug and improve their projects (CS)	**B- Events and Actions in Programs** • Program movement using 4 directions (CS) • Use a programming extension (CS) • Develop their program by adding different features (CS) • Fix bugs in a program against a given design (CS)	**B – Repetition in Games** • Run more than 1 process at a time (CS) • Write programs that include 2 or more loops that run at the same time (CS) • Re-use existing code snippets on new sprites (CS) • Design programs that use repetition (CS) • Create projects that include repetition (CS)	**B – Selection in Quizzes** • Modify conditions in a program (CS) • Create a program with different outcomes using selection (CS) • Use selection in an infinite loop to check a condition (CS) • Show that a condition can direct program flow in one of two ways (CS)	**B – Sensing Movement** • Test a program on an emulator (CS) • Transfer programs to a controllable device (CS) • Use selection to determine the flow of a program (CS) • Use a variable in an 'if, then, else' statements to select the flow of a program (CS) • Update a variable with a user input (CS0 • Use an operand in an 'if, then' statement • Design a program that uses inputs and outputs on a controllable device (CS)

Creating Media					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Knowledge					
Digital Painting • Recognise computers can be used to create digital art • Explain what different freehold tools do • Recognise tools can be adjusted to suit a purpose	**Digital Music** • Identify that computers can be used to play sounds of different instruments • Identify that the same pattern can be represented in different ways	**Stop-Frame Animation** • Explain that animation is a sequence of drawings or photographs (IT) • Identify that a capturing device needs to be in a fixed position	**Audio Production** • Identify digital devices that can rcord sound and play it back (DL) • Identify inputs and outputs required to play or record sounds (CS)	**Video Production** • Explain that a video is a visual media format (CS) • Identify digital devices that can and can't record video (DL) • Explain the purpose of a storyboard	**Web Page Creation** • Recognise the relationship between HTML and visual display • Recognise that web pages can contain different media types and are written by people

Digital Writing • Recognise that a keyboard is used to enter text on a computer and that text can be edited • Recognise the appearance of text can be changed • Recognise the Shift key changes the output of a key	• Compare playing music on instruments with makng music on a computer	• Recognise that smaller movements create smoother animation • Explain the need for consistency in working • Explain that a project must be exported so it can be shared	• Recognise that recorded audio can be stored and edited • Recognise that sound can be represented visually as a waveform • Recognise that audio can be layered so that multiple sounds can be played at the same time	• Recognise that filming techniques can be used to create different effects • Identify videos can be improved through and reshooting or editing either on a recording device or a computer • Explain the limitations of editing video on a recording device	• Recognise that a website is a set of hyperlinked web pages and the implications of linking to content owned by others • Recognise the need to preview pages (different screens/devices) • Recognise the need for a navigation path • Recognise common features of a web page layout (IT) • Understand the importance of copyright free images (DL)
Skills					
• Use freehand paint tools to create a picture using a range of colours (IT) • Use the shape and line tool to make marks and create a picture (IT) • Use the fill tool to colour an enclosed area • Use the undo buttons to correct a mistake • Change the brush size and colour (IT) • Make appropriate shape and colour choices • Choose the best paint tool for the purpose, combinging a range of	• Experiment with musical patterns and different sounds n a computer • Use a computer to compose a rhythm and a melody on a given theme • Use a computer to play the same music in different ways (e.g. tempo) • Evaluate and improve a musical composition created on a computer	• Plan an animation using a storyboard (IT) • Use onion-skinning to help small changes between frames (IT) • To capture an image and move a subject between captures • Create an effective stop-frame animation (IT) • Add additional media to enhance their animation (IT) • Review and improve their animation (IT)	• Use a digital device to record sound (IT) • Save a digital recording as a file (IT) • Open a digital recording from a file (IT) • Edit sections of a recording such as changing the volume of tracks in a project (IT) • Delete a section of audio • Import audio into a project	• Experiment with different camera angles (IT) • Use pan, tilt and zoom (IT) • Capture a video using a range of filming techniques, combining for a given purpose (IT) • Reshoot a scene or improve later through editing including the use of split, trim and crop • Store, retrieve, export, save and share a video to a computer (IT)	• Review and explore websites (natvigations bars, headers) (DL) • Add content to their own web page (add text, embed media) (IT) • Preview their own web page (different screen sizes) (IT) • Set the appearance and style of text on their web page • Create multiple web pages (IT) • Create hyperlinks between pages (IT) • Link web pages using hyperlinks (IT)

tools to create a piece of artwork (IT) • Open a word processor (IT) • Enter text into a computer using the letter, number and space keys (IT) • Position the text cursor in a chosen location • Use the Backspace key to remove text (IT) • Use the undo tool (IT) • Use punctuation and special characters • Select text by clicking and dragging (IT) • Select a word by double clicking (IT) • Change the appearance of text on a computer to achieve a desired effect • Use bold, italic and underline (IT) • Type in capital letters (IT) • Change the font (IT)					