

Subject Curriculum Overview



Computing

Southwater Infant Academy
Planning and Progression

'Growing, Learning and Succeeding Together'

Curriculum Statement

Intent

Here at The Southwater Infant Academy, we aim to provide an accessible computing curriculum which offers opportunities to develop knowledge, understanding, skills and technical ambition. We want to equip the children to use computational thinking and creativity to understand and change the world. Computing is an integral part of everyday life and will play a continual part in our children's futures. At The Southwater Infant Academy, we will provide children with the skills, creativity and enthusiasm to live and thrive in a world increasingly dependent on computing, provide a sequenced, structured and a progressive curriculum and support our children to become life-long learners. The children will develop knowledge and skills in the three main areas of the computing curriculum:

- Computer science (programming and understanding how digital systems work)
- Information technology (using computer systems to store, retrieve and send information)
- Digital literacy (evaluating digital content and using technology safely and respectfully).

Alongside these three key areas, we will introduce key people and influencers who have impacted computer technology, computer science and digital literacy, and we will do this throughout the curriculum. Giving children the opportunity to learn about people who directly impact the digital world we live in, will give them aspirations for the future workplace and as active participants in the digital world.

Implementation

Computing will not just be a standalone subject, it will find itself embedded throughout the curriculum. Children will have the opportunity to use a range of devices, equipment and programs for many purposes across the wider curriculum, as well as in discrete computing lessons. Employing cross-curricular links motivates our children, supports them in making connections and offers a depth to learning. All children in the Academy will be introduced to algorithms early on, enabling them to understand what they are; how they are implemented as programs on digital devices and that all programs work by following very precise instructions. Children will investigate programs and from the EYFS will learn to create and debug simple programs using logical reasoning.

As children progress into Key Stage One, they will continue this and begin to predict the behaviour of simple programs using coding and creating outputs.

Throughout the curriculum, children will use technology purposefully to create, organise, store, manipulate and retrieve digital content. In the EYFS, children are encouraged to use devices as soon as they enter Reception, in order to support fine motor control, encourage understanding of how technology works and how it can help them, and give them independence when collecting information about themselves and others. The children in Key Stage One progressively move towards retrieving, adapting and organising information from sources in order to aid their learning.

At The Southwater Infant Academy, we pride ourselves in a strong partnership with parents. We recognise the use of technology beyond school. We encourage all children and adults to use technology safely and respectfully. This vital message is addressed through our E4S curriculum, and is shared with parents at online safety workshops and forums with support from Childnet, Safer Internet, West Sussex Safeguarding Partnership using the integrated front door and Sussex Police. All children are regularly taught

what being safe online looks like. Regular discussions, modelling and teaching encourages children to identify and report anything that they have concerns about including content or contact on the internet and other online technologies.

Impact

Children at The Southwater Infant Academy speak in a positive and animated way about their science learning. Through exciting, engaging and inspiring learning opportunities children develop knowledge and skills in the field of science. Children perceive themselves as scientists and are confident to investigate, observe and analyse the world in which they live. By the end of Year Two, they are well equipped with the skills to question, problem solve, challenge and inquire with independence.

Computing Subject Specific Disciplines

	EYFS			Year 1			Year 2		
	Skills	Knowledge	Vocabulary	Skills	Knowledge	Vocabulary	Skills	Knowledge	Vocabulary
Computer Science	Be confident to try new activities and show independence, resilience and perseverance in the face of challenge.	Demonstrates ability to make different toys work by pushing buttons, lifting flaps etc <ul style="list-style-type: none"> Able to complete a simple program e.g; send a Beebot/Object in a desired direction. 	Technology computer <ul style="list-style-type: none"> push pull open shut press button switch screen robot, instruction, program. 	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.	To know that an algorithm is a set of instructions used to solve a problem or achieve an objective. To know that a computer program turns an algorithm into code that the computer can understand To work out what is wrong with a simple algorithm when the steps are out of order, and can write their own simple algorithm, Children will know that an unexpected outcome is due to the code	Instruction Algorithm Computer Programme Debug Direction Left Right Forwards Backwards Undo Arrow Challenge Rewind Control Action Background Execute Event Input Output Properties Scene Sound Object Run Scale When clicked	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.	To explain that an algorithm is a set of instructions to complete a task. When designing simple programs, children show an awareness of the need to be precise with their algorithms so that they can be successfully converted into code. To create a simple program that achieves a specific purpose. They can also identify and correct some errors, e.g. Debug	Action Button Design Mode Algorithm Collision detection Event Background Debugging Nesting Key pressed Nesting Object Run Test Predict Scale Timer Properties Scene Sequence Sound When clicked

				<p>they have created and can make logical attempts to fix the code.</p> <p>Use logical reasoning to predict the behaviour of simple programs.</p> <p>When looking at a program, children can read code, one line at a time and make good attempts to envision the bigger picture of the overall effect of the program. Children will know how to interpret where a turtle will end up at the end of the program.</p>			<p>Challenges: Chimp. Children's program designs display a growing awareness of the need for logical, programmable steps.</p> <p>To identify the parts of a program that respond to specific events and initiate specific actions. For example, they can write a cause and effect sentence of what will happen in a program</p>		
Information technology	Develop small motor skills so that children can use a range of tools competently, safely and confidently.	Demonstrates using technology for purpose e.g; Selects camera to take photo Thinks about uses of technology e.g. takes photo to make a record of an event.	Keyboard headphones app camera tablet laptop phone microphone	Use technology purposefully to create, organise, store, manipulate and retrieve digital content	To sort, collate, edit and store simple digital content e.g. children can name, save and retrieve	Sort Criteria Pictogram Data Collate Animation E-book Font	Use technology purposefully to create, organise, store, manipulate and retrieve digital content	To demonstrate an ability to organise data using, for example, a database such as 2Investigate and can	Backspace key Count tool Move cell tool Copy and paste Delete key Rows Columns Equals tool

	<p>Explore, use and refine a variety of artistic effects to express their ideas and feelings.</p> <p>Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</p>	<p>To create simple pictures/representations of events, people and objects.</p>	<p>Mouse</p>		<p>their work and follow simple instructions to access online resources, use Purple Mash 2Quiz example (sorting shapes), 2Code design mode (manipulating backgrounds) or using pictogram software such as 2Count.</p>	<p>File Sound effect Display board Copy and Paste Spreadsheet Arrow keys Cells Lock tool Backspace key Clipart Move cell tool Cursor Count tool Rows Columns Delete key Speak tool Imagine toolbox Technology</p>		<p>retrieve specific data for conducting simple searches. To edit more complex digital data such as music compositions Within 2Sequence. To be confident when creating, naming, saving and retrieving content. To use a range of media in their digital content including photos, text and sound.</p>	<p>Speak tool Cells Imagine toolbox Spreadsheet Lock tool Pictogram Collate Data Avatar Question Binary Tree Database Data Impressionism Palette Pointillism Share Surrealism Template Bpm – beats per minute Instrument Soundtrack Composition Digitally Music Sound effects Tempo Volume Concept map Quiz Narrative Node Non-Fiction Audience</p>
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									Animated Presentation
Digital Literacy (Cross curricular with PSHE)	<p><u>Media Literacy and Digital Resilience:</u> Using the internet and digital devices; communicating online, keeping safe online.</p> <p>Show resilience and perseverance in the face of a challenge.</p> <p>Explain the reasons for rules, know right from wrong and try to behave accordingly.</p>	<p>To know and why people use the internet the benefits of using the internet and digital devices. Understands that information can be retrieved from a computer.</p> <p>To name common technology found at home and at school.</p> <p>To know how people find things out and communicate safely with others online about keeping safe online and what to do if we see something we don't like. Know how to talk about different factors that support their overall health and well-being using sensible amounts of screen-time. To know how to interact with age-appropriate software.</p>	<p>Communicate Internet Devices Online Safety Trusted adult names of common tech found in homes.</p>	<p>Recognise common uses of information technology beyond school.</p> <p>Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns</p>	<p>Children will understand what is meant by technology and can identify a variety of examples both in and out of school. They can make a distinction between objects that use modern technology and those that do not e.g. a microwave vs. a chair.</p> <p>Children will understand the importance of keeping information, such as their usernames and passwords, private and actively demonstrate this in lessons. Children take ownership of</p>	<p>Log in Username Password Avatar My work Topic Log out Notifications Save Tools Technology</p>	<p>Recognise common uses of information technology beyond school.</p>	<p>Children can effectively retrieve relevant, purposeful digital content using a search engine. They can apply their learning of effective searching beyond the classroom. They can share this knowledge, e.g. Publish example template. Children make links between technology they see around them, coding and multimedia work they do in school e.g. animations, interactive code and programs.</p>	<p>Search Search Engine Display board Internet Sharing Email Attachment Digital footprint</p>




				<p>about content or contact on the internet or other online technologies.</p>	<p>their work and save this in their own private space such as their My Work folder on Purple Mash.</p>		<p>Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.</p>	<p>Children know the implications of inappropriate online searches. Children begin to understand how things are shared electronically such as posting work to the Purple Mash display board. They develop an understanding of using email safely by using 2Respond activities on Purple Mash and know ways of reporting inappropriate behaviours and content to a trusted adult.</p>	
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Long Term Plan

	<i>Bog Baby / Wild and Wonderful</i>	<i>London's Calling</i>	<i>Digeridoos and Kangeroos - Australia</i>	<i>This is Me</i>	<i>Through the Window</i>	
Year 1	<p>Unit 1.1 (4 weeks) Online Safety & Exploring Purple Mash Programmes - various</p> <p>Unit 1.3 (3 weeks) Pictograms Programmes - 2Count</p>	<p>Unit 1.6 (5 weeks) Animated story books Programmes - 2 Create a story Cross-curricular English: Paddington/The Queens Hat/Bog baby from Spring 1.</p>	<p>Unit 1.4 (3 weeks) Lego Builders Programmes - 2 DIY Cross-Curricular D.T. Following instructions, will help support Spring 2 biscuit bear.</p> <p>Online safety (3 weeks) Programmes - Digiduck: Childnet resources Cross-Curricular: Following PSHCE E4S planning</p>	<p>Unit 1.5 (3 weeks) Maze explorers Programmes - 2Go Cross-Curricular Maths positional language</p> <p>Unit 1.8 (3 weeks) Spreadsheets Programmes - 2 Calculate Cross-Curricular Science: grouping animals Maths: To calculate</p>	<p>Unit 1.2 (2 weeks) Grouping and sorting Programmes - 2 DIY Cross-Curricular Science: grouping animals</p> <p>Unit 1.9 (2 weeks) Technology outside school Programmes - Various</p>	<p>Unit 1.7 (6 weeks) Coding Programmes - 2 Code Cross-Curricular Maths positional language</p>
	<i>To infinity and beyond</i>		<i>World Explorers</i>		<i>Heroes / Kings and Queens</i>	
Year 2	<p>Unit 2.6 (5 weeks) Creating pictures Programmes - 2 PaintAPicture</p> <p>Online safety: (1 week) Digiduck Childnet (Use a</p>	<p>Unit 2.5 (3 weeks) Effective searching Programmes - Browser</p> <p>Unit 2.8 Presenting Ideas (4 weeks)</p>	<p>Unit 2.7 Making Music (3 weeks) Programmes - 2 Sequence</p>	<p>Unit 2.1 (5 weeks) Coding Programmes - 2 Code</p>	<p>Unit 2.3 (¾ weeks) Spreadsheets Programmes - 2 Calculate</p> <p>Unit 2.2 (3 weeks) Online safety -</p>	<p>Unit 2.4 Questioning (5 weeks) Programmes - 2Question 2Investigate</p>

	Digiduck story that was not used in year 1)	<u>Programmes –</u> Various	Online safety – Media literacy and digital resilience (4 weeks) (Refer to PSHE plans)		Staying safe online (Refer to PSHE plans) <u>Programmes -</u> Various	
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Unit Breakdown –

Predominant Area of Computing*		
	Computer Science	 Information Technology
		 Digital Literacy

*Most units will include aspects of all strands.

Scaffold up:

- Use word banks
- Use icons visible for the children to ensure they recognise icon names and use.

- Edit PowerPoints to accommodate the needs of your learners. Reduce the text if necessary and use relevant images linked to topics where possible.




Challenge:

















Follow the purple mash short term plans and use the challenges set out to extend the children’s learning of the objective, adapt challenge tasks to meet the needs of your children, before and during the lesson.











Cultural Capital: Look at the suggested ideas of how you can bring purple mash to life, there are a wide range of areas suggested including: black history, everyday life examples, professional people who can visit and bring it to life, current and historical figures who have influenced the topic area and definitions. Please feel free to include these in your working walls, classroom environment so they are visible to the children.
















EYFS
Skills Checker











Early Years Pupil ‘I Can...’ Statements
















	Unit Theme	‘I can’	Aut	Spr	Sum	Teacher Comments
		I can hold a computer mouse with my finger on the correct buttons.				











Mouse and Trackpad Skills	 Mouse and Trackpad Skills	I can use a mouse to make the cursor move around the computer screen where I want it to go.				
		I can click the correct mouse button to play games on the computer.				
		I can use a mouse accurately to click and drag objects on the screen.				
		I can use the mouse roller to scroll up and down a page.				
		I can use a laptop touchpad				

























Keyboard Skills	Unit Theme	'I can'	Aut	Spr	Sum	Teacher Comments
	 Keyboard Skills	I can find all the letters of the alphabet on a keyboard.				
		I can put spaces between words in my typed work.				
		I know how to correct typed work without re-doing the work entirely using the delete keys.				











	I can type capital letters and lower case and know how to change between these				
	I can type numbers using a keyboard.				
	I know how to move to the next line down when typing.				
	I can use the arrow keys to move around the screen				
	I can use the different inputs of a computer keyboard.				







Drawing Skills	Unit Theme	'I can'	Aut	Spr	Sum	Teacher Comments
	 <p>Drawing Skills</p>	I can select colours when painting on the computer.				
		I can draw pictures on the computer to go with my work.				
		I can use a computer to draw with different widths of pens.				





	I can try the different tools that I can draw with on the computer.				
	I can use the undo button correctly.				
	I can use the erase button.				
	I can use a touchscreen device purposefully.				
	I can draw on a computer using a mouse.				

















Robots	Unit Theme	'I can'	Aut	Spr	Sum	Teacher Comments
 Robots		I can talk about where I am moving a toy vehicle whilst I am moving it.				
		I can describe the route taken by a toy vehicle.				
		I can follow directions to make a route for a toy vehicle.				

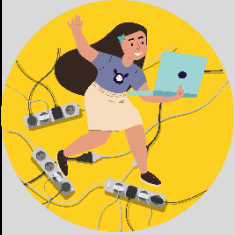





















	I can plan a route for a toy vehicle.				
	I can follow my own plan for where the toy vehicle should move.				
	I can make a floor robot move.				
	I can control the forwards, backwards and rotation of a floor robot one step at a time.				
	I can program a 3-step route for a floor turtle.				
	I can predict where a floor robot will end up when given the instructions for a 2 or 3 step route.				
	I can plan a route for a floor robot and then carry out these instructions one step at a time.				
	I can plan a route for a floor robot and then carry out these instructions more than one step at a time.				

Sounds	Unit Theme	'I can'	Aut	Spr	Sum	Teacher Comments
	 Sounds	I can make music using a computer.				
		I can add sound effects to my work.				
		I can use a device to record myself speaking and play back the sounds.				

	Unit Theme	'I can'	Aut	Spr	Sum	Teacher Comments
		I can talk about what technology is used at home.				
		I can talk about what technology is used outdoors.				

Technology Around Us	 <p>Technology Around Us</p>	I can talk about what technology is used in the world around me.				
						

Photography	Unit Theme	'I can'	Aut	Spr	Sum	Teacher Comments
	 <p>Photography</p>	I can talk about what photos show.				
		I can take photos using a digital device.				
		I can use the webcam in Mini Mash.				
		I can open photos in Purple Mash.				
		I can open photos that I have taken, in Purple Mash.				
Unit Theme	'I can'	Aut	Spr	Sum	Teacher Comments	



















Hardware	 Hardware	I can understand why having clean hands is important when using shared devices.				
		I can understand why it is not sensible to eat and drink whilst using a technological device.				
		I can understand why I need to take care with electronic devices and their plugs and wires.				
		I can take appropriate actions when I need to carry a device to a different location.				
		I can use devices with care.				
		I can identify the technology used around me.				
		I can identify the parts of a computer and what they are for.				

	Unit Theme	'I can'	Aut	Spr	Sum	Teacher Comments
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Safety and Privacy



Safety and Privacy




























I can explain how my work on the computer belongs to me and other people's work belongs to them.				
I can explain what it means for something to be private.				
I can talk about how my body feels when I am not comfortable with something.				
I know who can help me when I am feeling worried.				
I can show that I understand how to be kind to others.				
I can choose activities in my free time that help me to be healthy.				

	Unit Theme	'I can'	Aut	Spr	Sum	Teacher Comments
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Quizzes



























Quizzes

I can understand what a quiz is.				
I can complete a multiple-choice quiz.				
I can complete a sequencing quiz.				
I can type answers to quiz questions.				
I can complete a cloze quiz.				
I can complete a matching quiz.				
I can complete a sorting and sequencing quiz.				
I can complete quizzes on the computer.				
I can play games that ask me questions.				

	Unit Theme	'I can'	Aut	Spr	Sum	Teacher Comments
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Using Purple Mash with an Individual Login

I can get to the Purple Mash page on my device at school and at home.				
I can login to Purple Mash \ Mini Mash in school using the shortcut icon.				
I can login to Purple Mash and Mini Mash using my username and password.				
I can login to Purple Mash a Mini Mash using my username and password.				
I can login to Purple Mash a Mini Mash using my username and password.				
I can save work in my own tray\ folder when I am using Mini\Purple Mash.				
I can open work that I have done earlier.				
I can find and complete 2Dos that my teacher has set for me				

Year 1 – Autumn

Unit 1.1 – Online Safety & Exploring Purple Mash

Cultural capital, significant individuals and curriculum enrichment

(diversity, jobs, links to real world, history of objective)

- Meaning of the word Avatar: Derived from Hindu beliefs.
- Scientist to look at: <https://www.guinnessworldrecords.com/world-records/95409-first-first-person-shooter-fps-videogame> Steve Colley, Greg Thompson and Howard Palmer 1973, invented of the first MAZE shooter game that required an avatar, they worked at NASA.
- Xerox is credited with developing the first GUI (graphical user interface) in the early 1970s.
- Susan Kare: <https://www.youtube.com/watch?v=i2fJuggqDIU> First person to create icons for Apple MacIntosh in 1992.

Lesson	Title	Aims (Objectives)	Success Criteria
1	Safe Logins	<ul style="list-style-type: none"> • To log in safely and understand why that is important. • To create an avatar and to understand what this is and how it is used. • To be able to create a picture and add their own name to it. • To start to understand the idea of 'ownership' of creative work. • To save work to the My Work area and understand that this is private space. 	<ul style="list-style-type: none"> • Children can log in to Purple Mash using their own login. • Children have created their own avatar and understand why they are used. • Children can add their name to a picture they created on the computer. • Children are beginning to develop an understanding of ownership of work online. • Children can save work into the My Work folder in Purple Mash and understand that this is a private saving space just for their work. <p><u>Cultural capital</u> Meaning of the word Avatar: Derived from Hindu beliefs. Scientist to look at: https://www.guinnessworldrecords.com/world-records/95409-first-first-person-shooter-fps-videogame Steve Colley, Greg Thompson and Howard Palmer 1973, invented of the first MAZE shooter game that required an avatar.</p>
2	My Work Area	<ul style="list-style-type: none"> • To learn how to find saved work in the Online Work area. • To learn about what the teacher has access to in Purple Mash. • To learn how to see messages left by the teacher on their work. • To learn how to search Purple Mash to find resources. 	<ul style="list-style-type: none"> • Children can find their saved work in the Online Work area of Purple Mash. • Children can find messages that their teacher has left for them on Purple Mash. • Children can search Purple Mash to find resources.

3	Purple Mash Topics	<ul style="list-style-type: none"> To become familiar with the types of resources available in the Topics section. To become more familiar with the icons used in the resources in the Topics section. To start to add pictures and text to work. 	<ul style="list-style-type: none"> Children will be able to use the different types of topic templates in the Topics section confidently. Children will be confident with the functionality of the icons in the topic templates. Children will know how to use the different icons and writing cues to add pictures and text to their work.
4	Purple Mash Tools	<ul style="list-style-type: none"> To explore the Tools area of Purple Mash and to learn about the common icons used in Purple Mash for Save, Print, Open, New. To explore the Games area on Purple Mash. To understand the importance of logging out when they have finished. 	<ul style="list-style-type: none"> Children have explored the Tools section on Purple Mash and become familiar with some of the key icons: Save, Print, Open and New. Children have explored the Games section and looked at Table Toons (2x tables). Children can log out of Purple Mash when they have finished using it and know why that is important.

Unit 1.3 – Pictograms

Cultural capital, significant individuals and curriculum enrichment

(diversity, jobs, links to real world, history of objective)

- Data: What does data mean and why do we use it?
<https://www.bbc.co.uk/bitesize/topics/zg6tyrd/articles/zgg9pbk>

Lesson	Title	Aims (Objectives)	Success Criteria
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1	Data in Pictures	<ul style="list-style-type: none"> To understand that data can be represented in picture format. 	<ul style="list-style-type: none"> Children can discuss and illustrate the transport used to travel to school. Children can contribute to the collection of class data. Children have used these illustrations to create a simple pictogram.
2	Class Pictogram	<ul style="list-style-type: none"> To contribute to a class pictogram. 	<ul style="list-style-type: none"> Children can contribute to a class pictogram. Children can discuss what the pictogram shows.
3	Recording Results	<ul style="list-style-type: none"> To use a pictogram to record the results of an experiment. 	<ul style="list-style-type: none"> Children can collect data from rolling a die 20 times and recording the results. Children can represent the results as a pictogram.

Unit 1.6 – Animated Story Books

Cultural capital, significant individuals and curriculum enrichment

(diversity, jobs, links to real world, history of objective)

Lesson	Title	Aims (Objectives)	Success Criteria
1	Drawing and Creating	<ul style="list-style-type: none"> To understand the differences between traditional books and ebooks. To explore the tools of 2Create a Story's My Simple Story level. To save the page they have created. 	<ul style="list-style-type: none"> Children know the difference between a traditional book and an e-book. Children can use the different drawing tools to create a picture on the page. Children can add text to a page.

<u>2</u>	Animation	<ul style="list-style-type: none"> To add animation to a picture. To play the pages created so far. To save the additional changes and overwrite the file. 	<ul style="list-style-type: none"> Children can open previously saved work. Children can add an animation to a page. Children can play the pages created. Children can save changes and overwrite the file.
<u>3</u>	Sounds and More!	<ul style="list-style-type: none"> To add a sound effect to a picture. To add a voice recording to the picture. To add created music to the picture. 	<ul style="list-style-type: none"> Children can add a sound to the page. Children can add voice recording to the page. Children can create music for a page.
<u>4</u>	Making a Story	<ul style="list-style-type: none"> To add a background to the story. To demonstrate a good understanding of all the tools they have used in 2Create a Story and use these successfully to create their own story. 	<ul style="list-style-type: none"> Children can add a background to the page. Children can use the additional drawing tools on My Story mode. Children can change the font style and size.
<u>5</u>	Copy and Paste	<ul style="list-style-type: none"> To use the copy and paste feature to create additional pages. To continue and complete an animated story. To create a class display board of the story books created by the class. 	<ul style="list-style-type: none"> Children can use the copy and paste function to add more pages to their animated e-book. Children can share their e-books on a class story book display board.

Year 1 – Spring

During this term our topic is Australia, we currently have a direct link with some children from various locations around the country. This is an opportunity for children to record voice notes, scan in work and create PowerPoints to return to Australia. Throughout the term we will collate these pieces of work and build on the document as a class.

Unit 1.4 – Lego Builders

Cultural capital, significant individuals and curriculum enrichment

(diversity, jobs, links to real world, history of objective)

- History of Lego: <https://www.lego.com/en-gb/aboutus/lego-group/the-lego-group-history>
- Who invented Lego: <https://www.youtube.com/watch?v=4fZtrsD0SWg> Ole Kirk Kristiansen
- What is an algorithm? <https://www.twinkl.co.uk/resource/t2-i-033-the-robot-pupil-and-algorithms-powerpoint>
- Everyday example of why we need algorithms: funny video of dad and son making a peanut butter sandwich. <https://www.youtube.com/watch?v=Ct-IOOUqmyY>

Lesson	Title	Aims (Objectives)	Success Criteria
1	Following Instructions	<ul style="list-style-type: none"> • To emphasise the importance of following instructions. 	<ul style="list-style-type: none"> • Children know that to achieve the effect they want when building something, they need to follow accurate instructions. Children know that by following the instructions correctly, they will get the correct result. • Children know that an algorithm is a precise, step-by-step set of instructions used to solve a problem or achieve an objective.

2	Following and Creating Simple Instructions on the Computer.	<ul style="list-style-type: none"> To follow and create simple instructions on the computer. 	<ul style="list-style-type: none"> Children can follow instructions in a computer program. Children can explain the effect of carrying out a task with no instructions. Children know that computers need precise instructions to follow. Children know that an algorithm written for a computer to follow is called a program.
3	To consider how the order of instructions affects the result.	<ul style="list-style-type: none"> To consider how the order of instructions affects the result. 	<ul style="list-style-type: none"> Children understand how the order in which the steps of a recipe are presented affects the outcome. Children can organise instructions for a simple recipe. Children know that correcting errors in an algorithm or program is called 'debugging'.

Cultural capital, significant individuals and curriculum enrichment

- Reconnect with Unit 1.4 Lego Builders and the meaning of instructions and algorithms, the importance and relevance of these to daily lives.
- The term algorithm comes from 9th century Persian mathematician and geographer Muhammad ibn Musa al-Khwarizmi.
- Edsger Wybe Dijkstra (May 11, 1930 – August 6, 2002;) was a Dutch computer scientist. He received the 1972 Turing Award for fundamental contributions to developing programming languages, and was the Schlumberger Centennial Chair of Computer Sciences at The University of Texas at Austin from 1984 until 2000. His algorithm developed in 1956, was one of two used to create the instructions for google maps to find locations, using the shortest path from A to B.

1.5 Maze Explorers

Lesson	Title	Aims (Objectives)	Success Criteria
<u>1</u>	Challenges 1 and 2	<ul style="list-style-type: none"> To understand the functionality of the basic direction keys in Challenges 1 and 2. To be able to use the direction keys to complete the challenges successfully. 	<ul style="list-style-type: none"> Children know how to use the direction keys in 2Go to move forwards, backwards, left and right. Children know how to add a unit of measurement to the direction in 2Go Challenge 2. Children know how to undo their last move. Children know how to move their character back to the starting point.
<u>2</u>	Challenges 3 and 4	<ul style="list-style-type: none"> To understand the functionality of the basic direction keys in Challenges 3 and 4. To understand how to create and debug a set of instructions (algorithm). 	<ul style="list-style-type: none"> Children can use diagonal direction keys to move the characters in the right direction. Children know how to create a simple algorithm. Children know how to debug their algorithm.
<u>3</u>	Challenges 5 and 6	<ul style="list-style-type: none"> To use the additional direction keys as part of their algorithm. To understand how to change and extend the algorithm list. To create a longer algorithm for an activity. 	<ul style="list-style-type: none"> Children can use the additional direction keys to create a new algorithm. Children can challenge themselves by using the longer algorithm to complete challenges.
<u>4</u>	Setting More Challenges	<ul style="list-style-type: none"> To provide an opportunity for the children to set challenges for each other. To provide an opportunity for the teacher to add these challenges to a display board for the class to try. 	<ul style="list-style-type: none"> Children can change the background images in their chosen challenge and save their new challenge. Children have tried each other's challenges.

Unit 1.8 – Spreadsheets

Cultural capital, significant individuals and curriculum enrichment

- Black History Figure: Katherine Johnson who helped collect data into spreadsheets for NASA <https://www.bbc.co.uk/iplayer/episode/m000wfkj/our-black-history-heroes-series-1-6-katherine-johnson> cross curricular with Maths.
- Visitor from a company explaining how they use spreadsheets to run the business, for example, supermarket click and collect, amazon delivery driver, office staff at school, vets, doctors, nurses,

Lesson	Title		Success Criteria
1	Introduction to Spreadsheets	<ul style="list-style-type: none"> • To understand what a spreadsheet looks like. • To be able to navigate around a spreadsheet and enter data. • To learn new vocabulary related to spreadsheets. 	<ul style="list-style-type: none"> • Children can navigate around a spreadsheet. • Children can explain what rows and columns are. • Children can save and open sheets. • Children can enter data into cells.

2	Adding Images to a Spreadsheet and Using the Image Toolbox	<ul style="list-style-type: none"> To add clipart images to a spreadsheet. To use the 'move cell' and 'lock' tools. 	<ul style="list-style-type: none"> Children can open the Image toolbox and find and add clipart. Children can use the 'move cell' tool so that images can be dragged around the spreadsheet. Children can use the 'lock' tool to prevent changes to cells.
3	Using the 'Speak' and 'Count' Tools in 2Calculate to Count Items	<ul style="list-style-type: none"> To use the 'speak' and 'count' tools in 2Calculate to count items. 	<ul style="list-style-type: none"> Children can give images a value that the spreadsheet can use to count them. Children can add the count tool to count items. Children can add the speak tool so that the items are counted out loud. Children can use a spreadsheet to help work out a fair way to share items (Extension)

Year 1 – Summer

Unit 1.2 – Grouping & Sorting

Cultural capital, significant individuals and curriculum enrichment

- Pond dipping, sorting and grouping animals found in the pond, or sorting and grouping insect and animals found outside under a log. Take pictures and sort them into categories.
- Video on pond dipping: <https://www.rspb.org.uk/fun-and-learning/for-families/family-wild-challenge/activities/pond-dipping/>

- Creative ideas for going on a bug hunt and ways to sort and organise what they have found.
<https://creativestarlarning.co.uk/maths-outdoors/15-minibeast-outdoor-maths-challenges/>

Lesson	Title	Aims (Objectives)	Success Criteria
1	Sorting Away from the Computer	<ul style="list-style-type: none"> • To sort items using a range of criteria. 	<ul style="list-style-type: none"> • Children can sort various items offline using a variety of criteria.
2	Sorting on the Computer	<ul style="list-style-type: none"> • To sort items on the computer using the 'Grouping' activities in Purple Mash. 	<ul style="list-style-type: none"> • Children have used Purple Mash activities to sort various items online using a variety of criteria.

1.9 Technology outside school

Cultural capital, significant individuals and curriculum enrichment

- Students role play what happens to tins of beans in a supermarket. How they are tracked using a list (database) and removed from the list when they are bought. How when the list is empty tins of beans are ordered from the warehouse or bean manufacturer.
- Students role play earning money. As money is earned it is stored electronically in a bank and removed using cash machines and debit cards at the shop. This process is simplified to help key stage 1 students develop a basic understanding of how a bank works.
- Students role play what happens to a book when it is borrowed from the library. How they are tracked using a list (database) which records if they are in or out of the library.

- <https://www.youtube.com/watch?v=IQWwhIXJSDA>

Lesson	Title	Aims (Objectives)	Success Criteria
<u>1</u>	What is Technology?	<ul style="list-style-type: none"> • To find and understand examples of where technology is used in the local community 	<ul style="list-style-type: none"> • Children understand what is meant by 'technology'. • Children have considered types of technology used in school and out of school.
<u>2</u>	Technology outside school.	<ul style="list-style-type: none"> • To record examples of technology outside school. 	<ul style="list-style-type: none"> • Children have recorded 4 examples of where technology is used away from school.

1.7 Coding

Cultural capital, significant individuals and curriculum enrichment

- Influential woman in history: <https://www.idtech.com/blog/how-coding-can-change-the-world>. Margret Hamilton Margaret Hamilton was a young, plucky, 33-year old woman with glasses who liked math. She was one of the few women at MIT's Charles Stark Draper Laboratory, which in the early 1960's, was developing something important for NASA.
- Bill Gates created the first online programming game of tic tak toe (noughts and crosses) <https://www.youtube.com/watch?v=5fyMtBmvym8&t=28s>
- Bill Gates explaining how coding works. <https://www.youtube.com/watch?v=m2Ux2PnJe6E>

Lesson	Title		Success Criteria
<u>1</u>	Instructions	<ul style="list-style-type: none"> To understand what instructions are. To predict what will happen when instructions are followed. To understand that computer programs work by following instructions called code. 	<ul style="list-style-type: none"> Children can give and follow instructions. Children can draw symbols to represent instructions. Children can arrange code blocks to create a set of instructions.
<u>2</u>	Objects and Actions	<ul style="list-style-type: none"> To use code to make a computer program. To understand what objects and actions are. 	<ul style="list-style-type: none"> Children can create a program using code blocks. Children can use object and action code blocks.
<u>3</u>	Events	<ul style="list-style-type: none"> To understand what an event is. To use an event to control an object. 	<ul style="list-style-type: none"> Children can create a simple program using code blocks. Children can use event, object and action code blocks.
<u>4</u>	When Code Executes	<ul style="list-style-type: none"> To understand what an event is. To begin to understand how code executes when a program is run. 	<ul style="list-style-type: none"> Children can create a simple program using code blocks. Children can use event, object and action code blocks. Children can notice when their code executes when their program is run.
<u>5</u>	Setting the Scene	<ul style="list-style-type: none"> To understand what backgrounds and objects are. To understand how to use the scale property. 	<ul style="list-style-type: none"> Children can edit a scene by adding, deleting and moving objects. Children can change the size of objects using the properties table.
<u>6</u>	Using a Plan	<ul style="list-style-type: none"> To plan a computer program. To make a computer program. 	<ul style="list-style-type: none"> Children can create a design plan for their Free Code Scene program. Children can use code to make the program they have designed work.

Year 2 – Autumn

Unit 2.6 – Creating Pictures

Cultural capital, significant individuals and curriculum enrichment

- <https://www.tate.org.uk/kids/explore/what-is/impressionism> Good link here to add to lesson 1 ppt.
- Georges Seurat <https://www.bbc.co.uk/bitesize/topics/zwg9qyc/articles/zkm9jfr>
- Piet Mondrian <https://www.youtube.com/watch?v=Vgcr6VOwHf0> good start to this video with background history of who he was but links here with Art topic of using nature to inspire colour, lines etc.
- Reconnect with William Morris from Year 1 Art topic: In year 1 they designed their own designs in their sketchbooks Summer term
<https://www.youtube.com/watch?v=pl3EN407rbs> link about who he was.
- Design examples by William Morris <https://www.youtube.com/watch?v=zEnZfidIEyA>
- <https://www.tate.org.uk/kids/explore/what-is/surrealism> Lots of information here about surrealism.

Lesson	Title	Aims (Objectives)	Success Criteria
<u>1</u>	Introduction and Impressionism	<ol style="list-style-type: none"> 1. To explore 2Paint A Picture. 2. To look at the work of Impressionist artists and recreate them using the Impressionism template. 	<ol style="list-style-type: none"> 1. Children can describe the main features of impressionist art. 2. Children can use 2Paint a Picture to create art based upon this style.
<u>2</u>	Pointillist Art	<ol style="list-style-type: none"> 1. To look at the work of pointillist artists such as Seurat. 2. To recreate pointillist art using the Pointillism template. 	<ol style="list-style-type: none"> 1. Children can explain what pointillism is. 2. Children can use 2Paint a Picture to create art based upon this style.

<u>3</u>	Piet Mondrian	<ul style="list-style-type: none"> To look at the work of Piet Mondrian and recreate it using the Lines template. 	<ol style="list-style-type: none"> Children can describe the main features of Piet Mondrian's work. Children can use 2Paint a Picture to art based upon his style.
<u>4</u>	William Morris and Pattern	<ul style="list-style-type: none"> To look at the work of William Morris and recreate it using the Patterns template. 	<ol style="list-style-type: none"> Children can describe the main features of art that uses repeating patterns. Children can use 2Paint a Picture to create art by repeating patterns in a variety of ways. Children can combine more than one effect in 2Paint a Picture to enhance patterns.
<u>5</u>	Surrealism and eCollage	<ul style="list-style-type: none"> To look at some surrealist art and create your own using the eCollage function in 2Paint A Picture. 	<ol style="list-style-type: none"> Children can describe surrealist art. Children can use the eCollage function in 2Paint a Picture to create surrealist art using drawing and clipart.

Unit 2.5 – Effective searching

Cultural capital, significant individuals and curriculum enrichment

- What is the internet and WWW:
<https://www.bbc.co.uk/bitesize/topics/zs7s4wx/articles/z2nbgk7#:~:text=In%201989%20the%20world%20wide,the%20data%20from%20their%20experiments>.
- Search engines and how they work: <https://www.bbc.co.uk/bitesize/topics/zs7s4wx/articles/ztbjg6f>
- Larry Page and Sergey Brin:
https://www.google.com/search?q=History+of++search+engine+Google+KS1&sca_esv=566064718&rlz=1C1GCEA_enGB861GB861&ei=I9sGZdXaBMquhbIPieyYsAc&ved=0ahUKEwiVgrihvrGBAxVKV0EAHQk2BnYQ4dUDCBA&uact=5&oq=History+of++search+engine+Google+KS1&gs_l=ip=Egxnd3Mtd2l6LXNlcnAijEhpc3Rvcnkqb2YgIHNIYXJjaCBlbmdpbmUgR29vZ2xllEtTMTIFEAAyogQyCBAAGIkFGKIEmgUQABiiBDIIEAAYiQUYogRlpzxQ7RVYhZpWAHGAkAEAmAFgoAHbB6oBAjE2uAEDyAEA

[AEBwgILEAAYiQUYogQYsAPCaggQABiiBBiwA8ICCBahGKABGMMEWgIKECEYoaEYwwQYCsiCBBAHGariAwQYASBbiAYBKA YE&sclient=gws-wiz-serp#fpstate=ive&vld=cid:c21cee4d,vid:JR03hp7FV0,st:0](#)



Lesson	Title	Aims (Objectives)	Success Criteria
<u>1</u>	Understanding the Internet and Searching	<ul style="list-style-type: none">To understand the terminology associated with the Internet and searching.	<ol style="list-style-type: none">Children can recall the meaning of key Internet and searching terms.Children have completed a quiz about the Internet.
<u>2</u>	Searching the Internet	<ul style="list-style-type: none">To gain a better understanding of searching the Internet.	<ol style="list-style-type: none">Children can identify the basic parts of a web search engine search page.Children have learnt to read a web search results page.Children can search the Internet for answers to a quiz.
<u>3</u>	Sharing Knowledge of the Internet and Effective Searching	<ul style="list-style-type: none">To create a leaflet to help someone search for information on the Internet.	<ul style="list-style-type: none">Children have created a leaflet to consolidate knowledge of effective Internet searching.

Year 2 – Spring

Unit 2.7 – Making Music

Cultural capital, significant individuals and curriculum enrichment

- History of music <https://www.youtube.com/watch?v=-bVketPJ5to>
- Creator of garage band app; Doctor Gerhard Lengeling, German engineer Dr. Gerhard Lengeling joined Apple 17 years ago when Apple bought his company Emagic to build the backbone of Garageband and its sister program Logic.
- Black artists who have influenced and produced music.
<https://www.binnews.com/content/2021-06-07-celebrating-black-music-month-17-black-producers-who-changed-the-game/>

Lesson	Title	Aims (Objectives)	Success Criteria
1	Introducing 2Sequence	<ul style="list-style-type: none"> • To be introduced to making music digitally using 2Sequence. • To explore, edit and combine sounds using 2Sequence. 	<ul style="list-style-type: none"> • Children understand what 2Sequence is and how it works. • Children have used the different sounds within 2Sequence to create a tune. • Children have explored how to speed up and slow down tunes. • Children understand what happens to the tune when sounds are moved.
2	Making Music	<ul style="list-style-type: none"> • To add sounds to a tune to improve it. • To think about how music can be used to express feelings and create tunes which depict feelings. 	<ul style="list-style-type: none"> • Children have added sounds to a tune they have already created to change it. • Children have considered how music can be used to express feelings. • Children can change the volume of the background sounds. • Children have created two tunes which depict two feelings.

3	Soundtracks	<ul style="list-style-type: none"> To upload a sound from a bank of sounds into the Sounds section. To record their own sound and upload it into the Sounds section. To create their own tune using the sounds which they have added to the Sounds section. 	<ul style="list-style-type: none"> Children have uploaded and used their own sound chosen from a bank of sounds. Children have created, uploaded and used their own recorded sound. Children have created their own tune using some of the chosen sounds.
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Unit 2.1 – Coding

Cultural capital, significant individuals and curriculum enrichment

- How coding can benefit children beyond the classroom.
https://www.youtube.com/watch?v=eQ_4nsCWzDU&t=64s
- Invite a professional in like, policeman, fireman, shop assistant, fitness expert, anyone who can discuss resilience and perseverance needed to fulfil their job. How coding and algorithms are needed to follow a process and problem-solving techniques.
- Black History - Garrett Morgan: <https://kids.britannica.com/kids/article/Garrett-Morgan/443679> <https://www.youtube.com/watch?v=pW7T-lpCMiQ>

Lesson	Title	Aims (Objectives)	Success Criteria
1	Algorithms	<ul style="list-style-type: none"> To understand what an algorithm is. To create a computer program using an algorithm. 	<ul style="list-style-type: none"> Children can explain that an algorithm is a set of instructions. Children can describe the algorithms they created. Children can explain that for the computer to make something happen, it needs to follow clear instructions.

2	Collision Detection	<ul style="list-style-type: none"> To create a program using a given design. To understand the collision detection event. 	<ul style="list-style-type: none"> Children can plan an algorithm that includes collision detection. Children can create a program using collision detection. Children read blocks of code and predict what will happen when it is run.
3	Using a Timer	<ul style="list-style-type: none"> To understand that algorithms follow a sequence. To design an algorithm that follows a timed sequence. 	<ul style="list-style-type: none"> Children can create a program that uses a timer-after command. Children can explain what the timer-after command does in their program. Children can predict what will happen in a program that includes a timer-after command.
4	Different Object Types	<ul style="list-style-type: none"> To understand that different objects have different properties. To understand what different events do in code. 	<ul style="list-style-type: none"> Children can create a computer program that includes different object types. Children can modify the properties of an object. Children can use different events in their program to make objects move.
5	Buttons	<ul style="list-style-type: none"> To create a program using a given design. To understand the function of buttons in a program. 	<ul style="list-style-type: none"> Children can create a computer program that includes a button object. Children can explain what a button does in their program. Children can modify the properties of a button to fit their program design.
6	'Smelly Code' Debugging	<ul style="list-style-type: none"> To know what debugging means. To understand the need to test and debug a program repeatedly. To debug simple programs. 	<ul style="list-style-type: none"> Children can explain what debug (debugging) means. Children can use a design document to start debugging a program. Children can debug simple programs.

Year 2 – Summer

2.3 Spreadsheets

Cultural capital, significant individuals and curriculum enrichment

Lesson	Title	Aims (Objectives)	Success Criteria
<u>1</u>	Reviewing prior use of spreadsheets	<ul style="list-style-type: none"> To review the work done in 2Calculate in year 1. To revise spreadsheet related vocabulary. To use some 2Calculate tools that were introduced in year 1. 	<ul style="list-style-type: none"> Children can explain what rows and columns are in a spreadsheet. Children can open, save and edit a spreadsheet. Children can add images from the image toolbox and allocate them a value. Children can add the count tool to count items.
<u>2</u>	Copying and Pasting Totalling tools	<ul style="list-style-type: none"> To use copying, cutting and pasting shortcuts in 2Calculate. To use 2Calculate totalling tools. To use 2Calculate to solve a simple puzzle 	<ul style="list-style-type: none"> Children can use copying, cutting and pasting to help make spreadsheets. Children can use tools in a spreadsheet to automatically total rows and columns. Children can use a spreadsheet to solve a mathematical puzzle.
<u>3</u>	Using a spreadsheet to add amounts	<ul style="list-style-type: none"> To explore the capabilities of a spreadsheet in adding up coins to match the prices of objects 	<ul style="list-style-type: none"> Children can use images in a spreadsheet. Children can work out how much they need to pay using coins by using a spreadsheet to help calculate.
<u>4</u>	Creating a table and block graph	<ul style="list-style-type: none"> To add and edit data in a table layout. To use the data to manually create a block graph. 	<ul style="list-style-type: none"> Children can create a table of data on a spreadsheet. Children can use the data to create a block graph manually.

2.2 Online safety

Cultural capital, significant individuals and curriculum enrichment

- <https://www.twinkl.co.uk/resource/ks1-all-about-tim-berners-lee-powerpoint-t-tp-69745>
Tim Berners-Lee created the first search engine that was only text in 1992 and became public in 1993. <https://www.youtube.com/watch?v=GUrDI6OkJfU>
- Ray Tomlinson programmed the first emailing system and incorporated the @ sign
<https://www.youtube.com/watch?v=XhXk3wzemR4>

Lesson	Title	Aims (Objectives)	Success Criteria
<u>1</u>	Searching and Sharing	<ul style="list-style-type: none"> • To know how to refine searches using the Search tool. • To know how to share work electronically using the display boards. • To use digital technology to share work on Purple Mash to communicate and connect with others locally. • To have some knowledge and understanding about sharing more globally on the Internet. 	<ul style="list-style-type: none"> • Children can use the search facility to refine searches on Purple Mash by year group and subject. • Children can share the work they have created to a display board. • Children understand that the teacher approves work before it is displayed. • Children are beginning to understand how things can be shared electronically for others to see both on Purple Mash and the Internet.

2	Email Using 2Respond	<ul style="list-style-type: none"> To introduce Email as a communication tool using 2Respond simulations. To understand how we talk to others when they are not there in front of us. To open and send simple online communications in the form of email. 	<ul style="list-style-type: none"> Children know that Email is a form of digital communication. Children understand how 2Repond can teach them how to use email. Children can open and send an email to a 2Respond character. Children have discussed their own experiences and understanding of what email is used for. Children have discussed what makes us feel happy and what makes us feel sad.
3	Digital Footprint	<ul style="list-style-type: none"> To understand that information put online leaves a digital footprint or trail. To begin to think critically about the information they leave online. To identify the steps that can be taken to keep personal data and hardware secure 	<ul style="list-style-type: none"> Children can explain what a digital footprint is. Children can give examples of things that they would not want to be in their digital footprint.

2.4 Questioning

Cultural capital, significant individuals and curriculum enrichment

- Pictograms uses: <https://www.youtube.com/watch?v=Tnl6wqkYALA>
- Can you create a pictogram to collect data yourselves and record it?
- Binary tree: ??

Lesson	Title	Aims (Objectives)	Success Criteria
<u>1</u>	Using and Creating Pictograms	<ul style="list-style-type: none"> To show that the information provided on pictograms is of limited use beyond answering simple questions 	<ul style="list-style-type: none"> Children understand that the information on pictograms cannot be used to answer more complicated questions.
<u>2</u>	Asking Yes / No Questions	<ul style="list-style-type: none"> To use yes/no questions to separate information 	<ul style="list-style-type: none"> Children have used a range of yes/no questions to separate different items.
<u>3</u>	Binary Trees	<ul style="list-style-type: none"> To construct a binary tree to separate different items. 	<ul style="list-style-type: none"> Children understand what is meant by a binary tree. Children have designed a binary tree to sort pictures of children.
<u>4</u>	Using 2Question - a ComputerBased Binary Tree Program	<ul style="list-style-type: none"> Use 2Question (a binary tree) to answer questions 	<ul style="list-style-type: none"> Children understand that questions are limited to 'yes' and 'no' in a binary tree. Children understand that the user cannot use 2Question to find out answers to more complicated questions. Children have matched 2Simple item pictures to names using a binary tree.
<u>5</u>	Using 2Investigate: a NonBinary Database.	<ul style="list-style-type: none"> To use a database to answer more complex search questions. To use the Search tool to find information. 	<ul style="list-style-type: none"> Children understand what is meant by a database. Children have used a database to answer simple and more complex search questions.