Ranvilles Junior School – our Computing Pathway

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National Curriculum statement

Ambitious Learners

Every half term, the children participate in the Ranvilles SMSC 'Big Debate', which brings together threads from different curriculum subjects to create a line of enquiry, which, when evaluated by the children, strengthens and connects the children's knowledge and understanding. This star represents topics that would make a significant contribution to the 'Big Debate'.

			Topic Strand					National Curriculum Strands						
								Computer Science			Information Technology	Digital Literacy		
			Computing Systems and Networks	Programming	Data Handling	Creating Media	Online Safety	**CS1** Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	**CS2** Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.	**CS3** Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	**CS4** Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	**CS5** Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	**CS6** Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration.	**CS7** Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.
Year 3	Topic 1 Autumn 1	**Networks and the Internet**	✓								✓	✓	✓	
	Topic 2 Autumn 2	**Scratch**		✓				✓	✓	✓	✓	✓		
	Topic 3 Spring 1	**Journeys inside a computer** ★	✓					✓		✓			✓	
	Topic 4 Summer 1	**Online Safety** ★					✓					✓	✓	✓
	Topic 5 Summer 2	**Video Trailers**				✓					✓			✓
Year 4	Topic 1 Autumn 1	**Collaborative Learning** ★	✓								✓		✓	
	Topic 2 Autumn 2	**Scratch**		✓				✓	✓	✓	✓			
	Topic 3 Spring 1	**Online Safety** ★					✓					✓		✓
	Topic 4 Spring 2	**Computational Thinking**		✓				✓	✓	✓	✓			
	Topic 5 Summer 2	**Investigating Weather**			✓				✓		✓			✓
Year 5	Topic 1 Autumn 1	**Search Engines**	✓									✓	✓	✓
	Topic 2 Autumn 2	**Online Safety**					✓				✓	✓		✓
	Topic 3 Spring 1	**Mars Rover 1** ★			✓						✓		✓	
	Topic 4 Summer 1	**Programming Music**		✓				✓	✓	✓	✓			
	Topic 5 Summer 2	**Stop Motion Animation** ★				✓		✓	✓					
Year 6	Topic 1 Autumn 1	**Online Safety** ★					✓					✓	✓	✓
	Topic 2 Autumn 2	**Introduction to Python**						✓	✓	✓	✓			
	Topic 3 Spring 1	**Bletchley Park** ★	✓								✓	✓	✓	✓
	Topic 4 Summer 1	**History of Computers**				✓					✓		✓	
	Topic 5 Summer 2	**Big Data**			✓						✓		✓	✓

Ranvilles Junior School – the Computing Pathway – Year 3

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Year 3

Focus The contextual focus for the pupils' learning.	Purpose The importance of the topic in our curriculum.	Our SMSC 'Big Debate' Links *The purple '**Ambitious Learners**' star illustrates where there are planned focus links to support the children's knowledge and understanding in exploring 'The Big Debate'.*
Autumn 1 Computer Systems & Networks **Networks and the Internet**	In order to introduce the children to the Computing system in Ranvilles, so that all children understand the technology behind the equipment and systems that they are using.	***Making a difference as an individual is more important than as a team.***

Step 1	Step 2	Step 3	Step 4	Step 5
To recognise what a network is.	To demonstrate how information moves around a network.	To demonstrate how a website works.	To explore the role of a router.	To identify the role of packet data.

Autumn 2 Programming **Scratch**	In order to introduce the children to simple forms of programming through the medium of Scratch, allowing	***Making a positive contribution in the world is your responsibility, not mine.***

Step 1	Step 2	Step 3	Step 4	Step 5
To explore a programming application.	To use repetition (a loop) in a program.	To program an animation.	To program a story.	To program a game.

Spring 1 Computer Systems & Networks **Journeys Inside a Computer**	In order to build on the children's understanding of computer networks and the internet by learning about the hardware and its purpose of the equipment and systems that they are using.	***What we have achieved in this century is more significant than the past.***

Step 1	Step 2	Step 3	Step 4	Step 5
To recognise basic inputs and outputs.	To identify the components inside a laptop.	To understand the purpose of computer parts.	To understand the purpose of computer parts.	To decompose a tablet computer.

Spring 2 *This term has been deliberately left free for teachers to use AfL to close gaps and support with misconceptions identified from the previous units.*	***What is more important, physical, social, emotional or mental well-being?***

Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
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Summer 1 **Online Safety**	In order for the children to be safe, secure and happy when using the internet by building their knowledge and confidence of how to stay safe online.	***Embracing diversity enhances understanding and appreciation of the world.***

Step 1	Step 2	Step 3	Step 4	Step 5
To understand how the internet can be used to share beliefs, opinions and facts.	To explain what should be done before sharing information online.	To identify the effects that the internet can have on people's feelings.	To understand the ways personal information can be shared on the internet.	To understand the rules for social media platforms.

Summer 2 Creating Media **Video Trailers**	In order for the children to express their own interests and imagination through creating and editing a video trailer for a story.	***I'm Ok – You're OK! Differences are good.***

Step 1	Step 2	Step 3	Step 4	Step 5
To plan a book trailer.	To take photos or videos that tell a story.	To edit a video.	To add text and transitions to a video.	To evaluate video editing.

Ranvilles Junior School – the Computing Pathway – Year 4

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Year 4

Focus The contextual focus for the pupils' learning.	Purpose The importance of the topic in our curriculum.	Our SMSC 'Big Debate' Links *The purple '**Ambitious Learners**' star illustrates where there are planned focus links to support the children's knowledge and understanding in exploring 'The Big Debate'.*
Autumn 1 Computer Systems & Networks **Collaborative Learning**	In order to reflect on collaborative software and develop the children's knowledge in using the functions of Microsoft Office, to ensure that children are proficient in the word processing and data analysis software.	***Identity and self-worth are influenced more by change than by context and culture.***

Step 1	Step 2	Step 3	Step 4	Step 5
To understand that software can be used to work online collaboratively.	To understand how to contribute to someone else's work effectively.	To understand how to create a digital survey.	To create and share a Microsoft Form.	To analyse data. Context: using MS Excel spreadsheets

Autumn 2 Programming **Further Scratch**	In order to secure and develop the children's knowledge of programming further through the medium of Scratch, in particular through reflecting on the use and purpose of variables.	***Being powerful is more important than being different.***

Step 1	Step 2	Step 3	Step 4	Step 5
To recall the key features of Scratch.	To understand how a Scratch game works by using decomposition to identify key features.	To recognise what a variable is.	To understand how to make a variable in Scratch.	To create a quiz using variables.

Spring 1 **Online Safety**	In order for the children to be safe, secure and happy when using the internet by building their knowledge and confidence of how to stay safe online. This unit supports children in identifying the safety of online sources of information and reflecting on how trustworthy these are.	***Keeping safe spiritually, mentally and emotionally is all our responsibility physically and online.***

Step 1	Step 2	Step 3	Step 4	Step 5
To describe how to search for information within a wide group of technologies and make a judgement about the probable accuracy.	To describe some of the methods used to encourage people to buy things online.	To explain why lots of people sharing the same opinions or beliefs online do not make those opinions or beliefs true.	To explain that technology can be designed to act like or impersonate living things.	To explain how technology can be a distraction and identify when I might need to limit the amount of time spent using technology.

Spring 2 Programming **Computational Thinking**	In order to introduce the children to the concept of algorithms – i.e. how a computer thinks and acts – in view of informing their understanding and complexity of programming in units to come higher up the school.	***We have the right to learn from our mistakes without being judged.***

Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
To understand that computational thinking is made up of four key strands.	To understand what decomposition is and how to apply it to solve problems.	To understand what pattern recognition and abstraction mean.	To understand how to create an algorithm and what it can be used for.	To combine computational thinking skills to solve a problem.	To understand that computational thinking is made up of four key strands.

Summer 1 *This term has been deliberately left free for teachers to use AfL to close gaps and support with misconceptions identified from the previous units.*	***Our behaviour should always positively reflect how we value others.***

Step 1	Step 2	Step 3	Step 4	Step 5
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Summer 2 Data Handling **Investigating Weather**	In order to give the children a real-life opportunity to gather, analyse and present data in the context of weather forecasting.	***We are all responsible for our environment and natural world to ensure lives are impacted positively.***

Step 1	Step 2	Step 3	Step 4	Step 5
To log data taken from online sources in a spreadsheet.	To design a weather station.	To design an automated machine to respond to sensor data.	To understand how weather forecasts are made.	To use tablets or digital cameras to present a weather forecast.

Ranvilles Junior School – the Computing Pathway – Year 5

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Year 5

	Focus The contextual focus for the pupils' learning.	**Purpose** The importance of the topic in our curriculum.	**Our SMSC 'Big Debate' Links** *The purple '**Ambitious Learners**' star illustrates where there are planned focus links to support the children's knowledge and understanding in exploring 'The Big Debate'.* ★
	Autumn 1 Computer Systems & Networks **Search Engines**	In order to develop the children's knowledge and understanding of search engines. This will ensure that all pupils can use search enginges efficiently and evaluate the trustworthiness of the results.	***Belonging - we should all be free to move between countries.***

Step 1	**Step 2**	**Step 3**	**Step 4**	**Step 5**
To understand what a search engine is and how to use it.	To be aware that not everything online is true.	To search effectively.	To create an informative poster.	To understand how search engines work.

Autumn 2 **Online Safety**	In order for the children to be safe, secure and happy when using the internet by building their knowledge and confidence of how to stay safe online. This unit supports children in evaluating how they will create their own online footprint and the effects this may have on their wellbeing.	***Being remembered for making a difference is more important than making a difference.***

Step 1	**Step 2**	**Step 3**	**Step 4**	**Step 5**
To understand how apps can access personal information and how to alter the permissions.	To be aware of the positive and negative aspects of online communication.	To understand how online information can be used to form judgements.	To discover ways to overcome bullying.	To understand how technology can affect health and wellbeing.

Spring 1 Data Handling **Mars Rover** ★	In order to introduce the children to binary coding in the context of the Mars Rover and use and apply binary code effectively.	***Making a difference to the world is critical for the future.***

Step 1	**Step 2**	**Step 3**	**Step 4**	**Step 5**
To identify how and why data is collected from space.	To read and calculate numbers using binary code.	To identify the computer architecture of the Mars Rovers.	To use simple operations to calculate bit patterns.	To represent binary as text.

Spring 2 *This term has been deliberately left free for teachers to use AfL to close gaps and support with misconceptions identified from the previous units.*	***The voice of a child is as important and valuable as that of an adult.***

Step 1	**Step 2**	**Step 3**	**Step 4**	**Step 5**	**Step 6**
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Summer 1 Programming **Programming Music: Sonic Pi**	In order to develop their knowledge of programming from Scratch in lower KS2 to music, where children are able to express their own individuality and interests through programming their own soundtrack for a specific purpose.	***Being financially safe is just as important as being emotionally safe.***

Step 1	**Step 2**	**Step 3**	**Step 4**	**Step 5**
To tinker with a new piece of software.	To create a program that plays themed music.	To plan a soundtrack program.	To program a soundtrack.	To program music for a specific purpose.

Summer 2 Creating Media **Stop Motion Animation** ★	In order to build all pupils' knowledge and understanding of media through creating, developing and editing their own stop motion video.	***Learning together and from our mistakes leads to significant personal growth.***

Step 1	**Step 2**	**Step 3**	**Step 4**	**Step 5**
To understand what animation is.	To understand what stop motion animation is.	To plan a stop motion video.	To create a stop motion animation	To edit and assess my stop motion animation

Ranvilles Junior School – the Computing Pathway – Year 6

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Year 6

Focus The contextual focus for the pupils' learning.	Purpose The importance of the topic in our curriculum.	Our SMSC 'Big Debate' Links *The purple '**Ambitious Learners**' star illustrates where there are planned focus links to support the children's knowledge and understanding in exploring 'The Big Debate'.*
Autumn 1 **Online Safety**	In order for the children to be safe, secure and happy when using the internet by building their knowledge and confidence of how to stay safe online. This unit supports children in building their independence safely online, through exploring safe passwords and safe use of media.	***It is important that some personal information is in the public domain.***

Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
To describe online issues that give us negative feelings and know how to get help.	To explore the impact and consequences of sharing online.	To know how to create a positive online reputation.	To describe how to capture bullying content as evidence.	To manage personal passwords effectively.	To be aware of strategies that help protect people online.

Autumn 2 Programming **Introduction to Python**	In order to develop the children's knowledge of programming through increasing the complexity and introducing the new software of Python to the children.	***Change always has a positive impact.***

Step 1	Step 2	Step 3	Step 4	Step 5
To tinker with a new piece of software.	To understand nested loops.	To understand basic Python commands.	To use loops when programming.	To understand the use of random numbers.

Spring 1 Computer Systems & Networks **Bletchley Park**	In order to inspire the children through the importance of the code breakers at Bletchley Park through exploring the purpose of computer codes and the impact of the achievements of those at Bletchley Park. Links to our Second World War unit.	***It is possible to break the cycle of injustice.***

Step 1	Step 2	Step 3	Step 4	Step 5
To understand there are many different types of secret codes.	To understand the importance of having a secure password.	To understand the importance of Bletchley Park to the World War II war effort.	To research historical figures that contributed to technological advances in computing.	To research and present information about historical figures in computing.

Spring 2 *This term has been deliberately left free for teachers to use AfL to close gaps and support with misconceptions identified from the previous units.*	***Together we can make our world more sustainable for everyone.***

Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
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Summer 1 Creating Media **History of Computers**	In order to develop the children's knowledge and understanding of creating mdeia through reflecting on how modern technology affects everyday life.	***Fair trade is fair.***

Step 1	Step 2	Step 3	Step 4	Step 5
To tinker with audio recording.	To record, edit and add sound effects to a radio play.	To understand how computers have changed and the impact this has had on the modern world.	To research one of the computers that changed the world and present information about it to the class.	To design a computer of the future.

Summer 2 Data Handling **Big Data!**	In order to develop the children's knowledge and understanding of analysing data, through learning about infrared waves beofre inputing, analysing and evaluating this data.	***Every individual can leave a positive legacy.***

Step 1	Step 2	Step 3	Step 4	Step 5
To identify how barcodes and QR codes work.	To know how infrared waves transmit data.	To recognise how RFID is used.	To input and analyse real-world data.	To analyse and evaluate data.