

CURRICULUM DESIGN for COMPUTING

Computing INTENT

At Mosaic, we strive to develop a curriculum relevant to the continuous technological developments of the 21st Century and which reflects the experiences of our children. We recognise that our children need to be given the computational and digital knowledge and skills that prepare them for being able to understand technological change and to be enabled to adapt to future technological developments. This is achieved by a high-quality computing education that equips pupils to use computational thinking and ensures that all pupils are responsible, competent, confident and creative users of their technological world. The children's computational thinking is advanced through cultural capital, opportunities to use computing outside of this curriculum framework, and through our structure of voices and themes. We aim for the children to leave Mosaic with the experience of a broad, rich and ambitious computing curriculum

Computing IMPLEMENTATION

Computing follows the National Curriculum; objectives are delivered through long and short enquiries, across three themes: Computer Science, Information Technology and Digital Literacy. The computing 'voices' ensure skills specific to Computing are taught each and every year; they are repeated and progressive. The curriculum makes use of prior knowledge and provides clear references on how learning will be used in future enquiries. At the end of the enquiry, a high-quality 'outcome' is shared with others, including parents and/or the school community.

Classrooms are well resourced for Computing delivery, including the use of teacher laptops and iPads, interactive smart boards/projectors, as well as access to a bank of laptops/iPads shared across each key stage and a whole school tech LAB.

Children also progress their computing knowledge through specific learning in relation to the framework of 'Internet Legends', supporting the children's engagement with online safety so that they can be safe, healthy and thrive online. Computing is also embedded through the everyday use in the classroom that given them a rich experience as well as creating media through other curriculum areas.

For those children that show a particular enthusiasm for the subject, they have the opportunity to become a member of the Tech Team. Our Tech team scheme gives children the chance to explore learning beyond the National curriculum – we focus on using technology to support own interests, providing technical help around the school (eg. Managing tech during whole school productions and assemblies) and becoming online safety champions.

Computing IMPACT

Impact of teaching and learning will be determined through SLT reviews, subject lead observations and termly assessment. The Computing Lead meets with children and questions them on their learning and determines the depth of their knowledge as well as their reflections on the core values that they were working on.

Progression of Knowledge

Our Computing curriculum for KS1-KS2 follows the main themes of online safety, computing systems and networks, digital literacy and coding which can intertwine with each other as they progress through the year groups. There is an expectation that children will use their prior learning and build upon this as they journey through Mosaic. Children will reach an **end point** where their understanding of computing has been strengthened and deepened through this purposefully mapped out curriculum.

In EYFS, our curriculum is sequenced through experiences, children learn through play opportunities and engage in challenges linked to the EYFS curriculum. The classrooms contain a role play area with a range of technology (iPads and Desktops) both functioning and model / broken devices, or a variety of electronic toys such as remote-controlled cars, walkie-talkies and interactive pets. Children tinker and play with these devices during continuous provision. Children will use technology to solve problems and produce creative outcomes, especially in developing their initial understanding and having opportunities to use computational thinking effectively. From our Nurseries to Reception, there is a difference between the technology that children will encounter; we work help build knowledge and familiarity ready for KS1. In Reception, children are introduced to desktop computers to give children prior knowledge for Year 1 with their 'Technology around us' enquiry where children develop their knowledge of basic computer uses. Children are introduced to the theme being safe online with role play and specific teaching opportunities such as internet safety day. The EYFS curriculum is mindful of how their curriculum can be used to create the foundations of prior knowledge which we build upon as children journey through Year 1 and KS1.

| | Online safety | Computer systems and networks | Digital literacy | Coding | | |
|-----|---|--|---|---|---|--|
| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| A1 | Think U know: Jesse & Friends | Share with care | Don't fall for fake | Secure your secrets | It's cool to be kind | When in doubt, talk it out |
| A2 | Technology around us | IT around us | Connecting computers | The Internet | Systems | Communication |
| SP1 | Explore a Topic with Research and Collaboration (Transport) | Explore a Topic with Research and Collaboration (Brazil) | Explore a Topic with Research and Collaboration (Ghana) | Explore a Topic with Research and Collaboration (Water Cycle) | Explore a Topic with Research and Collaboration (Water Cycle) | Explore a Topic with Research and Collaboration (World War II) |
| SP2 | Digital painting | Digital writing | Animation | Photo Editing | Video Editing | Spreadsheets |
| SM1 | Sequencing | Sequencing and Loops | Events and Loops | Sprites and Nested Loops | Sprites and Variables | Problem solving (input and output/ processing) |
| SM2 | Loops | Events and Data | Conditionals | Functions and Conditionals | Data and Simulations | Interactive animations and games |

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| <p style="writing-mode: vertical-rl; transform: rotate(180deg);">End points:</p> | <p>By the end of Key Stage 1, children will:</p> <ul style="list-style-type: none"> ✓ Have experienced a range of hardware such as desktops, bee bots code-a-pillars and iPads. ✓ Learnt how to create a simple program and develop the knowledge of how to debug an algorithm. ✓ Learnt how to use basic components of a computer that can be transferred to other hardware. ✓ Have created and sorted data into a visual representation using a specific software. ✓ Have experience of creating blocks of code for a practical purpose. | <p>By the end of Key Stage 2, children will build on their prior knowledge of the past and extend. Children will:</p> <ul style="list-style-type: none"> ✓ Create a stop animation frame using a new software. ✓ Develop their knowledge of how computer systems work and are connected together through networks. ✓ Develop their understanding of patterns in algorithms and be able to loop sequences of code for a specific purpose. ✓ Extend their experience and knowledge of collecting data through uses of hardware and analysing the data on the computer system. ✓ Apply their knowledge of computer science and programming to a physical computing system. ✓ Design vectors through creating objects and layering them to then create a shape. ✓ Create a webpage to extend their knowledge of computer systems and start to develop their knowledge of HTML code. ✓ Create a spreadsheet from collecting information, input data to a formula and representing the data in form of a graph and table. |
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The Voices of Computing (Disciplinary Knowledge)

Woven through our Computing curriculum are our 'Voices'. It is our intention that the voices are used, where appropriate, during Computing teaching. Children will therefore encounter these 'Voices' repeatedly throughout their time at Mosaic. They will use their prior knowledge of a specific 'voice', such as 'create and collaborate' and build upon this in their Learning Enquiries. The 'Voices' are progressive.

| Digital Citizens | | Create and Collaborate | | Computational thinking | | Analyse and evaluate | |
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| EF/5 | <ul style="list-style-type: none"> Discuss with a peer how to use a device. Explore a range of technology both functioning and broken. Can use the internet with adult supervision to find and retrieve information of interest to them. Being able to talk about internet safety. | EF/5 | <ul style="list-style-type: none"> Use ICT hardware to interact with age-appropriate computer software Begin to independently take photographs and videos. Use a piece of software with a peer. Can create content such as a video recording, stories, and/or draw a picture on screen | EF/5 | <ul style="list-style-type: none"> Understand how a command gives an outcome. Completes a simple program on electronic devices | EF/5 | <ul style="list-style-type: none"> With support, analyse how to fix a technological problem. Explain how they were successful with a piece of technology. |
| KS1 | <ul style="list-style-type: none"> Recognise different uses of technology. Explain the rules of technology when at school and at home to keep safe. Seek support from an adult when navigating online or encountering something that worries you. Explore unfamiliar software by making connections with familiar software and technology. | KS1 | <ul style="list-style-type: none"> Design a simple programme for a specific purpose. Create images using specific software. Work with others in designated role to contribute towards a specific outcome. Pick a specific design element to impact an outcome. Begin to recognise that specific tools will impact/contribute towards my design. | KS1 | <ul style="list-style-type: none"> Explain what an algorithm is. Modify an algorithm for a specific outcome. Begin to recognise patterns in an algorithm. With support, decompose an algorithm into its simple functions. | KS1 | <ul style="list-style-type: none"> Begin to analyse potential problems and software and explain solutions to fixing them. Make predictions about a simple sequence of commands. Begin to debug algorithms. Evaluate the effectiveness of my work and suggest improvements. |
| Y3/4 | <ul style="list-style-type: none"> Recognise and explain the risks while communicating online and know where to report problems to. Explain different strategies of keeping personal data safe. Independently navigate online to work towards a specific outcome. Recognise a digital device and how they contribute towards a network. Explain different types of hardware they have used and the purpose of it. | Y3/4 | <ul style="list-style-type: none"> Begin to collaborate with different software towards a design purpose. Create media using specific tools a software. Know the tools that enable one to edit media creations. Be able to switch between roles when working towards an outcome. | Y3/4 | <ul style="list-style-type: none"> Explain the difference between an algorithm and code. Recognise patterns and loop them within coding. Explain the difference between controlled loops and infinite loops and when to apply them. Understand how to generalise a code into its key functions. Amend a code to change its designed outcome or function. | Y3/4 | <ul style="list-style-type: none"> Select relevant software and tools from analysing the purpose they are required for. Read code and be able to debug it without seeing at work. Evaluate the effectiveness of others' outcomes and suggest improvements linked to a tool. Analyse a new piece of technology with confidence and demonstrate how to use it. |
| Y5/6 | <ul style="list-style-type: none"> Recognise and explain how the online world is designed to alter your opinion. Positively operate online developing a strong reputation while communicating with others. Explain how data and information is shared and stored through a series of networks. | Y5/6 | <ul style="list-style-type: none"> Confidently combine different software and designs to an overall outcome. Use specific drawing tools through grouping and duplicating to create an image. Confidently collaborate different software and tools to produce a design. Mentor others within a process that ensure that equal knowledge is gained. | Y5/6 | <ul style="list-style-type: none"> Code a physical computing component through selecting specific conditions. Understand how selection in coding works which they can demonstrate within writing an algorithm or code. Begin to recognise and use HTML code. Decompose a code to change a specific function. | Y5/6 | <ul style="list-style-type: none"> Recognise and explain that there could be more than one solution to a problem. Explain and modify a problem to its most effective solution. Evaluate their work to ensure it reflects the purpose of the design. Specially modify parts of a sequence within an outcome to improve its quality. |

| Year 1 | | | | | | |
|----------------------|---|--|---|---|---|---|
| Theme | Online safety | Computer systems and networks | Digital literacy | Digital literacy | Coding | Coding |
| National Curriculum | <p>Use technology safely and respectfully, keeping personal information private.</p> <p>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>Recognise common uses of information technology beyond school.</p> <p>Use logical reasoning to predict the behaviour of simple programs</p> | <p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</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 about content or contact on the internet or other online technologies.</p> | <p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</p> | <p>Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions.</p> <p>Create and debug simple programs.</p> <p>Use logical reasoning to predict the behaviour of simple programs.</p> <p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</p> | <p>Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions.</p> <p>Create and debug simple programs.</p> <p>Use logical reasoning to predict the behaviour of simple programs.</p> <p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</p> |
| Specific content | <p>In this unit, pupils will learn about how to stay safe online and how to respond to upsetting content. Learners will also explore what information can be shared online and what information should be kept private.</p> | <p>Pupils will develop their understanding of technology and how it can help them in their everyday lives. They will start to become familiar with the different components of a computer by developing their keyboard and mouse skills. Learners will also consider how to use technology responsibly.</p> | <p>Pupils will learn about safe and relevant research online. They will explore online search engines and watch short videos on their particular topic. Pupils will also consider how to remain safe online and key words can be used to produce better search results/ filter unwanted content.</p> | <p>Pupils will explore different ways to create digital art. They will use a range of techniques to create digital art on tablets and desktops. Pupils will use shapes and lines to create a composition and explore how their choices influence the final design.</p> | <p>Pupils will explore sequential algorithms to solve simple puzzles. They will work on debugging sequential algorithms and find ways to program the most efficient line of code – loops.</p> | <p>In this unit pupils will continue to explore loops and looping simple sequences of instructions. They will use what they have learnt to create patterns. At the end of the unit, pupils will work on a mini-project applying all the coding skills they have learnt so far.</p> |
| Sequencing knowledge | <p>Prior knowledge: In Reception, pupils have learned about using devices safely and who to alert if they see something upsetting.</p> <p>Future knowledge: In Year 2, pupils will further their knowledge on what should be shared online and what information should be kept private.</p> | <p>Prior knowledge: Pupils have had experience of desktop computers through playing games and using others hardware through supervised experiences.</p> <p>Future knowledge: Pupils will use their knowledge of digital devices and compare them with non-digital devices. Learners will be introduced to networks and</p> | <p>Prior knowledge: In Reception, pupils were exposed to the use of technology for research.</p> <p>Future knowledge: In Year 2, pupils will use their research skills to collate information on a particular topic.</p> | <p>Prior knowledge: Children already have experience and knowledge of digital devices and have experience of creating media through other curriculum opportunities.</p> <p>Future knowledge: In Year 2, children will apply their digital drawing skills to create a stop-frame animation</p> | <p>Prior knowledge: In Reception, pupils have had experience of desktop computers through playing games and using others hardware through supervised experiences. They have also come across instruction writing and sequencing events.</p> <p>Future knowledge: In Y2, pupils will apply their knowledge of program design to on screen programming technology and be able to use, modify and create programs.</p> | |

connecting devices.

Year 2

| Year 2 | | | | | | |
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| Theme | Online safety | Computer systems and networks | Digital literacy | Digital literacy | Coding | Coding |
| National Curriculum | <p>Use technology safely and respectfully, keeping personal information private.</p> <p>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>Recognise common uses of information technology beyond school.</p> <p>Use logical reasoning to predict the behaviour of simple programs</p> | <p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</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 about content or contact on the internet or other online technologies.</p> | <p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</p> | <p>Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions.</p> <p>Create and debug simple programs.</p> <p>Use logical reasoning to predict the behaviour of simple programs.</p> <p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</p> | <p>Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions.</p> <p>Create and debug simple programs.</p> <p>Use logical reasoning to predict the behaviour of simple programs.</p> <p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</p> |
| Specific content | <p>In this unit, pupils will learn how to create and manage a positive reputation both online and offline, while respecting the privacy and boundaries of others. Pupils will also understand the potential impact of a mismanaged digital footprint. Finally, pupils will know to ask for adult help when dealing with difficult situations online.</p> | <p>Pupils will develop their understanding of digital devices, with an initial focus on inputs, processes, and outputs. They will also compare digital and non-digital devices. Learners will be introduced to computer networks, including devices that make up a network's infrastructure, such as wireless access points and switches. Finally, learners will discover the benefits of</p> | <p>Pupils will apply their knowledge of safe and relevant research online. They will explore online search engines and gather information on a particular topic. Pupils will use the data gathered to create presentations on a specific topic.</p> | <p>Pupils will make comparisons between using a computer for writing and writing on paper. The pupils will discuss how the two methods are the same and different and think of examples to explain this. They will demonstrate making changes to writing using a computer to compare the two methods. Finally, the pupils will begin to explain which they like best and</p> | <p>Pupils will learn how to develop sequential algorithms and how to identify bugs in pre-written code. They will apply their knowledge by writing lines of code to create digital art.</p> | <p>Pupils will continue their exploration sequential algorithms and use loops to write code efficiently. Finally, pupils will experiment with events and apply their knowledge in a mini-project (creating own animated game).</p> |

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| | | connecting devices in a network. | | think about which method would be the best method to use in different situations. | | |
| Sequencing knowledge | <p><u>Prior knowledge:</u> In Year 1, pupils learnt what information can be shared online and what information should be kept private. They have also learnt the basics of how to deal with upsetting content.</p> <p><u>Future knowledge:</u> In Year 3, pupils will learn how to differentiate from fake and trustworthy content online – including the concepts of phishing, catfishing and disinformation.</p> | <p>Prior knowledge: In Year 1, pupils have learnt about what a computer system is and how to use simple components on that computer system.</p> <p><u>Future knowledge:</u> In Year 3, pupils will learn that a computer network is a source of data (information) that can be used in various ways through digital devices they encounter across the computing curriculum.</p> | <p><u>Prior knowledge:</u> In Year 1, pupils became familiar with the use of technology for research purposes.</p> <p><u>Future knowledge:</u> In Year 3, pupils will use their online search skills to research.</p> | <p><u>Prior knowledge:</u> In Y1, pupils became familiar with the use of desktops and laptops.</p> <p><u>Future knowledge:</u> In Year 3, pupils will use their typing and formatting skills to type and publish their own work.</p> | <p><u>Prior knowledge:</u> In Year 1, pupils had experience with creating and debugging simple programs.</p> <p><u>Future knowledge:</u> In Y3, pupils will continue to explore loops and events as well as applying conditionals to their programs.</p> | |

| Year 3 | | | | | | |
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| Theme | Online safety | Computer systems and networks | Digital literacy | Digital literacy | Coding | Coding |
| National Curriculum | <p>Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour;</p> <p>Identify a range of ways to report concerns about content and contact.</p> | <p>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.</p> | <p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</p> <p>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.</p> | <p>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.</p> | <p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> | <p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> |
| Specific content | <p>Pupils will understand that contacts or content they encounter online aren't necessarily true or reliable, and could involve efforts to trick them or steal their information, identity or property. Pupils will learn about different types of online scams that aim to get Internet users of all ages to respond to fraudulent posts and pitches and how to proceed should they encounter such scams.</p> | <p>In this unit, pupils will learn about how devices accept input and produce an output. They will learn to recognise similarities between using digital devices and using non-digital tools. Pupils will also explore how computers are connected to each other and will be able to explain the role of a switch, server, and wireless access point in a network.</p> | <p>Pupils will apply their knowledge of safe and relevant research online. They will explore online search engines and gather information on a particular topic. Pupils will use the data gathered to create presentations on a specific topic.</p> | <p>Learners will use a range of techniques to create a stop-frame animation using tablets. Next, they will apply those skills to create a story-based animation. This unit will conclude with learners adding other types of media to their animation, such as music and text.</p> | <p>Pupils will deepen their understanding of sequential algorithms and how to identify bugs in pre-written code/ their own code.</p> | <p>In this unit, pupils will learn and apply nested loops to solve puzzles. Once they have mastered nested loops, they will move on to conditionals (if/else) and create their own mini games.</p> |

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| Sequencing knowledge | <p><u>Prior knowledge:</u> In Year 2, pupils learnt how to create and manage a positive reputation both online and offline, including keeping their information safe online.</p> <p><u>Future knowledge:</u> In Year 4, pupils will learn that sharing your password gives others control of your digital footprint as well as giving them access to sensitive information.</p> | <p><u>Prior knowledge:</u> In Year 2, pupils developed their understanding of digital devices, with focus on inputs, processes, and outputs.</p> <p><u>Future knowledge:</u> Pupils will learn that the internet is a network of networks and will be able to demonstrate how information is shared across the internet.</p> | <p><u>Prior knowledge:</u> In Year 2, pupils used their research skills to collate information on a topic.</p> <p><u>Future knowledge:</u> In Year 4, pupils will continue to apply their skills to research online. They will consider what results are relevant and reliable.</p> | <p><u>Prior knowledge:</u> Children already have experience and knowledge of digital devices and have experience of creating media through other curriculum opportunities.</p> <p><u>Future knowledge:</u> Children will develop their video editing skills which will be used in curriculum opportunities and will be able to apply when creating other forms of media.</p> | <p><u>Prior knowledge:</u> Pupils had experience with creating and debugging simple programs. They have also applied their knowledge to create their own animated mini-game.</p> <p><u>Future knowledge:</u> In Y4, pupils will continue to explore events, conditionals and loops, applying these to projects based on their individual interests.</p> |
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| Year 4 | | | | | | |
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| Theme | Online safety | Computer systems and networks | Digital literacy | Digital literacy | Coding | Coding |
| National Curriculum | <p>Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour;</p> <p>Identify a range of ways to report concerns about content and contact.</p> | <p>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.</p> | <p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</p> <p>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.</p> | <p>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.</p> | <p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p> | <p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p> |

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| Specific content | In this unit, pupils will learn that sharing your password gives others control of your digital footprint and how someone else's actions can affect their digital footprint. Pupils will also learn how to create passwords that are hard to guess, yet easy to remember and how to customize privacy settings for the online services they use. | Pupils will learn that the internet is a network of networks and will be able to demonstrate how information is shared across the internet. Students will discuss why a network needs protecting and explain the types of media that can be shared on the web. Finally, pupils will learn the features of a website and consider how information spreads online. | Pupils will apply their knowledge of safe and relevant research online. They will explore online search engines and gather information on a particular topic. Pupils will use the data gathered to create presentations on a specific topic. | Learners will develop their understanding of how digital images can be changed and edited, and how they can then be resaved and reused. They will consider the impact that editing images can have, and evaluate the effectiveness of their choices. | In this unit, pupils will apply their previous knowledge to create a digital animation – they will be using sprites and program them using events. Students will apply their understanding of sharing personal and private information on the web by creating an interactive poster using their event knowledge. | In this unit, pupils will access Studio Code's Artist Lab where they will create their own art using nested loops. Next, pupils will learn that combining chunks of code into functions can be a helpful practice. They will continue to explore functions on different puzzles. |
| Sequencing knowledge | <p><u>Prior knowledge:</u> In Year 3, pupils learnt about different types of online scams that aim to get Internet users to fraudulent posts and pitches.</p> <p><u>Future knowledge:</u> In Year 5 pupils learn ways to respond to negativity online, in constructive and civil ways.</p> | <p><u>Prior knowledge:</u> In Year 3, pupils learnt about how devices accept input and produce an output. They learned to recognise similarities between using digital devices and using non-digital tools.</p> <p><u>Future knowledge:</u> In Year 4, pupils will</p> | <p><u>Prior knowledge:</u> In Year 3, pupils used their research skills to collate information on a topic.</p> <p><u>Future knowledge:</u> In Year 5, pupils will continue to apply their skills to research online. They will focus on collating information from different sources.</p> | <p><u>Prior knowledge:</u> Children already have experience and knowledge of digital devices and have experience of creating media through other curriculum opportunities.</p> <p><u>Future knowledge:</u> Children will develop their video editing skills which will be used in curriculum opportunities and will be able to apply when creating other forms of media.</p> | <p><u>Prior knowledge:</u> Pupils had experience with creating and debugging programs and applying their knowledge to individual projects, puzzles and digital art.</p> <p><u>Future knowledge:</u> Pupils will learn about variables and customization by creating their own "collector" style game.</p> | |

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| Year 5 | | | | | | |
| Theme | Online safety | Computer systems and networks | Digital literacy | Digital literacy | Coding | Coding |

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| <p>National Curriculum</p> | <p>Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour;</p> <p>Identify a range of ways to report concerns about content and contact.</p> | <p>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.</p> | <p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</p> <p>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.</p> | <p>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.</p> | <p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> | <p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> |
| <p>Specific content</p> | <p>Pupils will learn how to show empathy and kindness online. They will also learn ways to respond to negativity online, in constructive and civil ways. Finally, pupils will understand how to be a responsible media maker and develop the habit of asking, "Who posted this and why?".</p> | <p>In this unit, pupils will learn that computers can be connected together to form systems and recognise the role of computer systems in our lives. Pupils will learn that networked digital devices have an address and will be able to explain that data is transferred over networks in packets. Finally, pupils will know how the internet enables effective collaboration and will be able to recognise that working together on the internet can be public or private.</p> | <p>Pupils will apply their knowledge of safe and relevant research online. They will explore online search engines and gather information on a particular topic. Pupils will use the data gathered to create presentations on a specific topic.</p> | <p>Learners will learn how to create short videos by working in pairs or groups. As they progress through this unit, they will be exposed to topic-based language and develop the skills of capturing, editing, and manipulating video. Learners are guided with step-by-step support to take their idea from conception to completion. At the conclusion of the unit, learners have the opportunity to reflect on and assess their progress in creating a video.</p> | <p>In this unit, students will discuss the role of computers and technology in their lives, focusing on how apps and tools give users choices about how to use them. Students will also explore apps similar to those they'll create themselves later on. Students will use Sprite Lab's "Costumes" tool to customize their pet's appearance. They will then use events, behaviours, and other concepts they have learned to bring their project to life.</p> | <p>In this unit, students will apply their new skills with variables to one of three open-ended mini-projects. Students will explore sample programs, create a plan for their own project, and program it from scratch. Finally, students will create a customized "collector game", in which the user moves a sprite around to collect objects.</p> |
| <p>Sequencing knowledge</p> | <p><u>Prior knowledge:</u> Pupils have learnt the potential impact of a mismanaged</p> | <p><u>Prior knowledge:</u> Pupils learnt that the internet is a network of networks and</p> | <p><u>Prior knowledge:</u> Pupils used their research skills to collate information on</p> | <p><u>Prior knowledge:</u> Children already have experience and knowledge of digital</p> | <p><u>Prior knowledge:</u> Pupils had experience with creating and debugging programs and applying their knowledge to individual projects, puzzles and digital art.</p> | |

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| | <p>digital footprint and know to ask for adult help when dealing with difficult situations online.</p> <p><u>Future knowledge:</u> Pupils will learn how to identify situations of harassment or bullying online and specific ways to respond to online bullying when they see it.</p> | <p>how information is shared across the internet.</p> <p><u>Future knowledge:</u> In Year 6, pupils will put to practice what they have learned about the internet and understand how search engines rank their websites.</p> | <p>a topic.</p> <p><u>Future knowledge:</u> In Year 6, pupils will continue to apply their skills to research online. They will focus on selecting sources based on their ranking and credibility.</p> | <p>devices and have experience of creating media through other curriculum opportunities.</p> <p><u>Future knowledge:</u> Children will develop their video editing skills which will be used in curriculum opportunities and will be able to apply when creating other forms of media.</p> | <p><u>Future knowledge:</u> Pupils will apply their knowledge of programming and debugging to create their very own animations. They will use their programming skills as a vehicle for self-expression and entertainment.</p> |
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| Year 6 | | | | | | |
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| Theme | Online safety | Computer systems and networks | Digital literacy | Digital literacy | Coding | Coding |
| National Curriculum | <p>Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour;</p> <p>Identify a range of ways to report concerns about content and contact.</p> | <p>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.</p> | <p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</p> <p>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.</p> | <p>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.</p> | <p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> | <p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> |

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| <p>Specific content</p> | <p>In this unit, pupils will learn how to identify situations of harassment or bullying online and specific ways to respond to online bullying when they see it. Pupils will learn to recognize upsetting content and create a plan for talking about what upset them with a trusted adult. They will understand that they can refuse to watch or engage with it and learn ways to refuse disturbing content.</p> | <p>In this unit, pupils will learn about different search engines and what their limitations are – what can you find out searching the internet? Pupils will be able to explain that a search engine follows rules to rank relevant page and how these can be influenced. Finally, students will look at different ways of communicating online,.</p> | <p>Pupils will apply their knowledge of safe and relevant research online. They will explore online search engines and gather information on a particular topic. Pupils will use the data gathered to create presentations on a specific topic.</p> | <p>This unit introduces the learners to spreadsheets. They will be supported in organising data into columns and rows to create their own data set. Learners will be taught the importance of formatting data to support calculations, while also being introduced to formulas and will begin to understand how they can be used to produce calculated data. Learners will be taught how to apply formulas that include a range of cells, and apply formulas to multiple cells by duplicating them. Learners will use spreadsheets to plan an event and answer questions. Finally, learners will create charts, and evaluate their results in comparison to questions asked.</p> | <p>In this unit, students consider how computers get and give information to the user through inputs and outputs. Pupils will also learn about four common types of processing: if/then (conditionals), finding a match (searching), counting, and comparing. By the end of the unit, pupils will also explore how computers store information.</p> | <p>Students will explore how computer science in general, and programming specifically, plays a role in either a specific form of entertainment or as a vehicle for self-expression. Students are introduced to Game Lab, the programming environment for this unit, and begin to use it to position shapes on the screen. They review the basics of sequencing and debugging, as well as a few simple commands and delve further into these skills. By the end of the unit, pupils would have created their own animations.</p> |
| <p>Sequencing knowledge</p> | <p><u>Prior knowledge:</u> In Year 5, pupils learnt about how to show empathy and kindness online. They have also reflected on how to reply to negativity or inappropriate content online.</p> | <p><u>Prior knowledge:</u> Pupils have learnt that computers can be connected together to form systems and the role of computer systems in our lives.</p> | <p><u>Prior knowledge:</u> Pupils used their research skills to collate information on a topic.</p> | <p><u>Prior knowledge:</u> Pupils have prior knowledge in collecting data through data loggers and then analyzing and interpreting data on a computer system.</p> | <p><u>Prior knowledge:</u> Pupils had experience with creating and debugging programs and applying their knowledge to individual projects, puzzles and digital art.</p> | |

