

Computer Science

At the core of the Computing curriculum is computer science, in which pupils are taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming. There is more to computer science than programming, though. It incorporates techniques and methods for solving problems and advancing knowledge, and includes a distinct way of thinking and working that sets it apart from other disciplines. Every core principle can be taught or illustrated without relying on the use of a specific technology.



Computing 2021-2022



Digital Literacy

Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.



Information Technology



Information technology deals with applying computer systems to solve real-world problems. This

includes the areas of finding things out, exchanging and sharing information, and reviewing, modifying and evaluating work, remain as important now, for a broad and balanced technological education, as they ever were.

Computers are now part of everyday life. For most of us, technology is essential to our lives, at home and at work. 'Computational thinking' is a skill children must be taught if they are to be ready for the workplace and able to participate effectively in this digital world.

Our Computing curriculum has been developed to equip the children in our school with the foundational skills, knowledge and understanding of computing they will need for the rest of their lives. Through the programme of study for computing, they will learn how computers and computer systems work, design and build programs, develop their ideas using technology and create a range of content using a range of devices, apps and programs.

Online Safety

Our school aims to:

- Have robust processes in place to ensure the online safety of pupils, staff, volunteers and governors.
- Deliver an effective approach to online safety, which empowers us to protect and educate the whole school community in its use of technology.
- Establish clear mechanisms to identify, intervene and escalate an incident, where appropriate.



	EYFS : in our Nursery and Reception we follow the EYFS Development matters curriculum working towards the Early Learning Goals at the end of the Foundation Stage. Pupils follow a broad and balanced curriculum which is facilitated through enhanced provision which meets the needs and interests of our children.		
	Autumn Term	Spring Term	Summer Term
Nursery Computing	<p>How can I begin to use simple ICT equipment?</p> <p>Enhanced and continuous provision will provide opportunities to:</p> <ul style="list-style-type: none"> Using simple ICT equipment in role play Experimenting with mechanical toys and how to operate them Experimenting with sound books Using the 2simple program Using interactive phonics games Using the camera/ipad to document and share our learning 	<p>How can I use ICT equipment safely? How can I develop my skill in using technology?</p> <p>Enhanced and continuous provision will provide opportunities to:</p> <ul style="list-style-type: none"> Begin to develop an awareness of using technology safely-Smartie the Penguin Using toys that move in different ways Operating ICT equipment such as CD players, remote controls and cameras 	<p>How can I retrieve information from computers?</p> <p>Enhanced and continuous provision will provide opportunities to:</p> <ul style="list-style-type: none"> Using Beebots to experiment with programming Using the 2simple program and printing work Using interactive Literacy and Maths games Using sound turtles and sound pegs to record Using the camera/ipad to record our learning and share photos/videos
Reception Computing	<p>Enhanced and continuous provision will provide opportunities to:</p> <ul style="list-style-type: none"> Use Recording devices to capture thoughts and ideas. Use cameras and ipads to document our learning and showcase / share our ideas. Use ICT hardware to interact with age-appropriate computer software. Show a preference for a dominant hand when using ICT devices. 	<p>Enhanced and continuous provision will provide opportunities to:</p> <ul style="list-style-type: none"> program Beebots in fairytale land Learn about Internet safety through smarty the penguin. Use interactive programs such as Education city and rm maths. Use software such as 2Paint to create topic related pictures.Complete simple programs on the computer 	<p>Enhanced and continuous provision will provide opportunities to:</p> <ul style="list-style-type: none"> Introduction to Computing suite – Turning computers on and logging in. Retrieving information from computers. Use search engines to research Minibeasts. Use a range of technology e.g stopwatches and timers. Select and use ICT resources to record and support learning.

<p>Year 1 Computing</p>	<p><u>Keeping Safe with Computers- How can I stay safe online?</u> National Curriculum Coverage To use technology purposefully to create, organise, store, manipulate and retrieve digital content. To recognise common uses of information technology beyond school 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. The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> • I know to tell an adult if I see anything worrying online. • I can recognise how I use technology in my home and at school. <p><u>To be a Storyteller - How can I use a computer program to create a simple document?</u> National Curriculum Coverage To understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. To create and debug simple programs use logical reasoning to predict the behaviour of simple programs. To use technology purposefully to create, organise, store, manipulate and retrieve digital content recognise The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> • I can use a program to create a simple document. • I can use technology purposefully to create digital content 	<p><u>We are Animators (using technology to purposefully create digital content) - How to use technology purposefully?</u> National Curriculum Coverage To use technology purposefully to create, organise, store, manipulate and retrieve digital content. To recognise common uses of information technology beyond school use technology. The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> • I can use technology purposefully to create digital content. <p><u>Beebots - How can I use my knowledge to use a programmed toy?</u> National Curriculum Coverage To understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. To use logical reasoning to predict the behaviour of simple programs. To use technology purposefully to create, organise, store, manipulate and retrieve digital content. To recognise common uses of information technology beyond school. To use technology safely and respectfully. The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> • I can predict the behaviour of a programmed toy. • I can explain that an algorithm is a step by step set of instructions. 	<p><u>Creating a Powerpoint - How can I portray information I have researched?</u> National Curriculum Coverage To use technology purposefully to create, organise, store, manipulate and retrieve digital content. To recognise common uses of information technology beyond school. The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> • I can use a program to create a simple document. • I can use technology purposefully to create digital content. • I can recognise how technology can be used in school. <p><u>Scratch Junior - Can I create and apply simple algorithms?</u> National Curriculum Coverage To understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> • I can understand what algorithms are and how they are implemented on digital devices.
<p>Year 2 Computing</p>	<p><u>How can we find and present information using computers?</u> National Curriculum Coverage I know I need to keep my personal information private</p>	<p><u>Whatever the Weather How can we collect and present information?</u> National Curriculum Coverage I know I need to keep my personal information private</p>	<p><u>How can we create art using computers?</u> National Curriculum Coverage I know I need to keep my personal information private I can recognise how others use technology outside of school</p>

	<p>I can find, open, edit and save files I am working on I can use different software programs and discuss the benefits of their usage I can recognise how others use technology outside of school</p> <p>The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> • using search engines effectively to find information and pictures. • change the font type, font size and font colour. • insert pictures into a document. • add text into a document. <p>E-Safety Unit & Bee-Bots</p> <p><u>How can we keep ourselves safe when using computers?</u></p> <p>National Curriculum Coverage I know I need to keep my personal information private I can predict the behaviour of a programmed toy, clearly relating each action to part of an algorithm I can create and debug simple programs I can find and fix simple bugs in programs I can understand that programs run by following clear instructions</p> <p>The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> • the reasons we use the internet. • some of the problems that can happen when we use the internet. • what we can do to keep ourselves safe when using the internet. 	<p>I can recognise how others use technology outside of school I can find, open, edit and save files I am working on I can use different software programs and discuss the benefits of their usage</p> <p>The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> • looking at different ways information can be presented. • collecting information using different sources. • selecting an appropriate method to display the information they have collected. • comparing information that is presented in different ways. <p>Scratch - What does debugging mean?</p> <p>National Curriculum Coverage I know I need to keep my personal information private I can recognise how others use technology outside of school I can create a simple program to perform a task I can create and debug simple programs I can find and fix simple bugs in programs I can understand that programs run by following clear instructions</p> <p>The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> • identifying problems in a program (algorithm). • finding solutions to a problem so that the program runs correctly. • using different blocks in Scratch and understanding what these blocks do. 	<p>I can find, open, edit and save files I am working on I can use different software programs and discuss the benefits of their usage</p> <p>The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> • developing the range of tools we can use to create art. • the different effects that can be created using different tools. • creating their own pieces of artwork using tools. <p>How can I use Word to present information?</p> <p>National Curriculum Coverage I know I need to keep my personal information private I can recognise how others use technology outside of school I can find, open, edit and save files I am working on I can use different software programs and discuss the benefits of their usage</p> <p>The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> • opening, editing and saving documents. • developing typing skills. • changing the font type, size and colour. • adding text and pictures into a document.
<p>Year 3 Computing</p>	<p>Digital research/ E-safety (relating to online searching) – linked to Stone Age -Bronze Age</p> <p><u>How can I use a search engine to find information?</u></p>	<p>Digital media- linked to composing music for the Iron Man / E-safety (E-Awareness)</p> <p><u>How can I use computer technology to create music?</u></p> <p>National Curriculum Coverage:</p>	<p>Programming & control – scratch – Design a Tudor quiz / safety - communicating and collaborating</p> <p><u>What is an algorithm?</u></p> <p>National Curriculum Coverage:</p>

National Curriculum Coverage:
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.
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content

The sequence of lessons:

- Use technology safely and recognise acceptable and unacceptable behaviour.
- Use simple search technologies.
- Use simple search technologies and recognise that some sources are more reliable than others.

Multimedia & Word processing – linked to Stone Age-Bronze Age

How can I present my work effectively on the computer?

National Curriculum Coverage:
With support select and use a variety of software to accomplish goals.
Use simple search technologies to input information and pictures into documents.

The sequence of lessons:

- Recognise key features of layout and design.
- Select and import graphics.
- Select suitable sounds (including recording with a microphone) and visual effects.
- Organise and present information for a specific audience.
- Evaluate design and make suitable improvements.

Recognise familiar forms of input and output devices and how they are used.
Make efficient use of familiar forms of input and output devices.
Record sound using microphones.
With support select and use a variety of software to accomplish goals
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

The sequence of lessons:

- Develop awareness of relevant e-Safety issues, such as cyber bullying.
- Children understand and abide by the school's 'Being SMART Online' Rules and know that it contains rules that exist in order to keep children safe online.
- Understand what personal information should be kept private.
- Know that passwords keep information secure and that they should be kept private.
- Use ICT to select and record sounds in multimedia software
- Use music software to organise and reorganise sounds.
- Locate, record, save and retrieve sounds.
- Add sounds from different sources.
- To begin to layer sounds using music composition software using 2 simple.
- Save and retrieve work effectively.

Digital Data – Collect data linked to plants in order to create graphs and answer simple questions.

How can I present information I have collected?

National Curriculum coverage:

Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

The sequence of lessons:

- Know how to deal with unpleasant forms of electronic communication.
- Use technology safely and respectfully, keeping personal information private.
- Use technology safely and recognise acceptable and unacceptable behaviour.
- Design, write and debug programs that control or simulate virtual events.
- Use logical reasoning to explain how some simple algorithms work.
- Navigate the Scratch programming environment.
- Create a background and sprite for animation.
- Change the position of the sprite on the screen.
- Change background after a specific time.
- Add inputs to control their sprite.
- Save and retrieve work effectively.

	<ul style="list-style-type: none"> ● Save and retrieve work effectively. 	<p>With support select and use a variety of software to accomplish goals.</p> <p>The sequence of lessons:</p> <ul style="list-style-type: none"> ● Create questions for data collection. ● Collect data to present. ● Choose appropriate graphs to present data in simple charts. ● Interpret different graphs. ● Save and retrieve work effectively. 	
<p>Year 4 Computing</p>	<p><u>How does the internet work?</u></p> <p>National curriculum 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>The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> ● create a model of the school network ● map the school network ● understand how the Internet connects into the home and how a web page is accessed across the Internet ● what is a packet? ● research and create presentation about how the internet works <p><u>How do search engines work?</u></p> <p>National curriculum Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</p> <p>The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> ● what is a search engine ● how do search engines rank results ● understand new vocabulary ● compare different search engines 	<p><u>How do I add hyperlinks and sound to a presentation?</u></p> <p>National curriculum Select, use and combine a variety of software (including internet services) to design and create content that accomplish given goals, including collecting, analysing and presenting data and information.</p> <p>The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> ● research different European countries ● copy maps of European countries to add to presentation ● Add hyperlinks to websites ● Add sound to presentation ● create transitions between each slide ● Link each page to the contents page of presentation <p><u>How do I compose a piece of music using Google Chrome Music Lab?</u></p> <p>National curriculum Select, use and combine a variety of software on a range of digital devices to design and create content that accomplish given goals, including presenting information.</p> <p>The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> ● listen to a piece of music made on Chrome music lab and analyse it. 	<p><u>How do you use technology responsibly and understand that communication online may be seen by others?</u></p> <p>National curriculum Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p> <p>The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> ● Play Like Share ● Identify signs of manipulative, pressurising or threatening behaviour online. ● Respond safely if they think someone is trying to manipulate, pressure or threaten them. ● Understand their rights online, and respect those of others. ● Take measures to control their privacy and digital footprint. ● Get help from an appropriate source if they need it. <p><u>How do I use sequences, selection and repetition in coding?</u></p> <p>National curriculum design, write and debug programs that accomplish specific goals, Solve problems by decomposing them into smaller parts.</p>

	<ul style="list-style-type: none"> strategies for using internet searches effectively 	<ul style="list-style-type: none"> learn about the different structures of musical compositions Plan a piece of music using 6, 8 or 12 bars research the different instruments to use compose own piece of music Evaluate musical composition 	<p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p> <p>The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> create a question and break it down to understand how simple algorithms work design a maths quiz using scratch decompose quiz into smaller parts to understand what conditional selection is evaluate quiz and debug
<p>Year 5 Computing</p>	<p>Autumn 1 - Spreadsheet</p> <p>How can I use formulae to present data and perform calculations?</p> <p>National Curriculum</p> <ul style="list-style-type: none"> 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>The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> Design, input and test an increasingly complex set of instructions to a program or device. Independently select, use and combine a variety of software to design and create content for a given audience. <p>Autumn 2 - Search Engines</p> <p>How can I search the internet safely and efficiently?</p> <p>National Curriculum</p> <ul style="list-style-type: none"> Use search technologies effectively, appreciate how results are selected and 	<p>Spring 1 - Sketchup</p> <p>How can I create a computer-aided design using a software program?</p> <p>National Curriculum</p> <ul style="list-style-type: none"> 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. <p>The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> Independently select and use appropriate software for a task Design programs that accomplish specific goals. <p>Spring 2 - Flowol</p> <p>How do I create a program to control a simulation?</p> <p>National Curriculum</p> <ul style="list-style-type: none"> Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts use sequence, selection, and repetition in programs; work with variables and various forms of input and output. 	<p>Summer 1 - E-safety</p> <p>How can I safely use the internet to communicate?</p> <p>National Curriculum</p> <ul style="list-style-type: none"> 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. 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. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. <p>The sequence of lessons will focus on:</p> <ul style="list-style-type: none"> Use and combine a variety of software to design and create content for a given audience.

ranked, and be discerning in evaluating digital content.

The sequence of lessons will focus on:

- Using more advanced features when searching online.
- Using a range of search tools to find exact websites.
- Understand the need to only select age appropriate content and how to choose online content which is age appropriate.
- Use filters in search technologies effectively and appreciates how results are selected and ranked

- Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

The sequence of lessons will focus on:

- Design, input and test increasingly complex programs.
- Control external hardware from within programs (simulated).
- Use loops to repeat tasks within a program.
- Use IF statements to alter the way programs run.
- Explain how increasingly complex algorithms solve a given problem.
- Design, write and test simple programs with opportunities for selection, where a particular result will happen based on actions or situations controlled by the user.

- Use more advanced features when searching online. Use a range of search tools to find exact websites.
- Understand the need to only select age appropriate content and how to choose online content which is age appropriate.

Summer 2 - Webpage Design
How can I produce and share a webpage?

National Curriculum

- 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.
- 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.
- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

The sequence of lessons will focus on:

- Using and combining a variety of software to design and create content for a given audience.
- Using the internet to share and transfer data to a third party.
- Use more advanced features when searching online.
- Use a range of search tools to find exact websites.
- Choose online content which is age appropriate.

E-safety - How can I keep myself safe when using the internet?

National Curriculum Coverage

Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

The sequence of lessons will focus on:

- Use technology respectfully and responsibly
- Identify a range of ways to report concerns about content and contact in and out of school
- Be discerning when evaluating digital content
- Use filters in search technologies effectively and is discerning when evaluating digital content

Coding using Python - How can I use coding to write a maze game program?

National Curriculum Coverage

Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts Use sequence, selection, and repetition in programs; work with variables and various forms of input and output Use logical reasoning to explain how some

Computer Networks - How do they work?

National Curriculum Coverage

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 Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content

The sequence of lessons will focus on:

- Understand how computer networks enable computers to communicate and collaborate
- Begin to use internet services within his/her own creations to share and transfer data to a third party

How can I use Digital Literacy and Creativity

National Curriculum Coverage

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.

The sequence of lessons will focus on:

- Independently select, use and combine a variety of software to design and create content for a given audience, including collecting, analysing, evaluating and presenting data and information

How can I use a range of hardware / software to create an advert?

National Curriculum Coverage

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.

This sequence of lessons will focus on:

- Independently select, use and combine a variety of software to design and create content for a given audience, including collecting, analysing, evaluating and presenting data and information
- Design and create a range of programs, systems and content for a given audience
- Independently select, use and combine a variety of software to collect, analyse, evaluate and present data and information

Coding using Raspberry Pi - How can I create a code to make a fairground ride work?

National Curriculum Coverage

Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts Use sequence, selection, and repetition in programs; work with variables and various forms of input and output Use logical reasoning to explain how some

	<p>simple algorithms work and to detect and correct errors in algorithms and programs</p> <p>The sequence of lessons will focus on:</p> <ul style="list-style-type: none">• Include use of sequences, selection and repetition with the hardware used to explore real world systems• Solves problems by decomposing them into smaller parts• Create programs which use variables• Use variables, sequence, selection, and repetition in programs• Use logical reasoning to explain how increasingly complex algorithms work and to detect and correct errors in algorithms and programs efficiently	<ul style="list-style-type: none">• Design and create a range of programs, systems and content for a given audience• Independently select, use and combine a variety of software to collect, analyse, evaluate and present data and information	<p>simple algorithms work and to detect and correct errors in algorithms and programs</p> <p>The sequence of lessons will focus on:</p> <ul style="list-style-type: none">• Include use of sequences, selection and repetition with the hardware used to explore real world systems• Solves problems by decomposing them into smaller parts• Create programs which use variables• Use variables, sequence, selection, and repetition in programs• Use logical reasoning to explain how increasingly complex algorithms work and to detect and correct errors in algorithms and programs efficiently
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