

Computing Curriculum



Happy Hearts, Open Minds, Bright Futures

Jesus promised: "I came that you may have life and have it to the full."

- John 10:10

Our Vision




Every child at Fladbury will know they are loved by God, have a **happy heart** and be part of a flourishing, well-led school. When they leave Fladbury, they will be well-prepared to meet challenges, confident in their abilities and look forward to their **bright future** with an **open mind**.

Our Computing Aims

The Fladbury curriculum for computing aims to ensure that children can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation. Children will be able to analyse problems in computational terms and have repeated practical experience of writing computer to solve such problems.

Children will be able to evaluate and apply information technology, including new and unfamiliar technologies, analytically to solve problems. Children will be responsible, competent, confident and creative users of information and communication technology.



Happy Hearts	Open Minds	Bright Futures
		
<p>Through our Computing Curriculum, the lens of our Christian value of 'joy' and our vision statement 'happy heart', the children of Fladbury are provided with suitable resources to empower them to find out about more things that make them happy.</p>	<p>The Computing curriculum at Fladbury is thorough and ambitious, equipping our children to use technology, computational thinking and creativity to understand and change the world. With an open mind, it is now more important than ever the children of Fladbury to understand how to use technology positively, responsibly and safely.</p>	<p>By the time they leave Fladbury our children will have gained key knowledge and skills in the 3 main strands of the National Curriculum for Computing. These strands are: Computer Science (programming and understanding how digital systems work), Information Technology (using computer systems to create, store, retrieve and send information) and Digital Literacy (evaluating digital content and using technology safely and respectfully).</p> <p>The depth and breadth of our coverage aims to provide all of our children with a solid grounding for future learning and the ability to be active digital citizens in the modern world.</p>

Spirituality in Computing

Fladbury's definition of Spirituality is: Spirituality is about understanding that we are part of something bigger than ourselves. It's the connections and relationships we have with God, with others, with ourselves and with nature. It brings about a sense of awe and wonder and can lead to asking big questions about who we are and our place in God's world.

Computing provides opportunities for reflection of awe and wonder about the achievements in ICT today and the possibilities for the future. ICT lets children have the opportunity to reflect on how computers can sometimes perform better in certain activities than people. To promote children's spiritual development, their sense of self and their will to achieve, we continually take the opportunity to praise our children for their contribution in lessons.

Intent	Implementation	Impact
<p>It is our intention to enable children to find, explore, analyse, exchange and present information. We also focus on developing the skills necessary for children to be able to use information in a discriminating and effective way. We want children to know more, remember more and understand more in computing so that they can become computer literate. Computing skills are a major factor in enabling children to be confident, creative and independent learners and it is our intention that children have every opportunity available to allow them to achieve this.</p> <p>We intend to build a computing curriculum that develops children's learning and results in the acquisition of knowledge of the world around them that ensures all children can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.</p> <p>We intend to build a computing curriculum that prepares children to live safely in an increasingly digital British society where children can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.</p>	<p>A clear and effective scheme of work that provides coverage in line with the National Curriculum. Teaching and learning should facilitate progression across all key stages within the strands of digital literacy, information technology and computer science. Access to resources which aid in the acquisition of skills and knowledge. Children will have access to the hardware (computers, tablets, programmable equipment) and software that they need to develop knowledge and skills of digital systems and their applications. Teaching and learning should facilitate progression across all key stages within the strands of digital literacy, information technology and computer science. Children will have the opportunity to explore and respond to key issues such as digital communication, cyber-bullying, online safety, security, plagiarism and social media. Wider curriculum links and opportunities for the safe use of digital systems are considered in wider curriculum planning. The importance of online safety is shown through displays within the learning environment and library. Parents are informed when issues relating to online safety arise and further information/support is provided if required. As well as opportunities underpinned within the scheme of work, children will also spend time further exploring the key issues associated with online safety.</p>	<p>Children will be confident users of technology, able to use it to accomplish a wide variety of goals, both at home and in school. Children will have a secure and comprehensive knowledge of the implications of technology and digital systems. This is important in a society where technologies and trends are rapidly evolving. Children will be able to apply the British values of democracy, tolerance, mutual respect, rule of law and liberty when using digital systems.</p>

Internet Safety

Online safety sits within the Digital Literacy strand of the curriculum. Online Safety is now a statutory part of the curriculum since the introduction of the new statutory RSE framework.

Online safety lessons are present within our Computing lessons and is also covered through a whole-school approach. Online safety is also taught within our RSE & PSHE curriculum. The guidance document, Education for a Connected World, provides a clearly structured progression for covering online safety in schools and we use this to plan internet safety into our curriculum.

To further ensure a whole-school approach we include national events such as Internet Safety Day into our school calendar. We invite guest speakers such as our local police into school for s and deliver parent workshops about online safety.

National Curriculum

Early Years

At Fladbury CE First School, we encourage children in The Early Years to think carefully about and explore the world around them. This includes the place of technology within our ever-changing world. Children are given opportunities to use and explore technology such as cameras, computers and tablets for real-life, useful purposes. Children are also taught about the importance of keeping safe online and given the tools and knowledge they need to do this

Key Stage One

Pupils should be taught to:

- Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- Create and debug simple programs
- Use logical reasoning to predict the behaviour of simple programs
- Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- 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

Lower Key Stage Two

Pupils should be taught to:

- Design, write and debug programs that accomplish specific goals, including controlling or simulation 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 simple algorithms works and to detect and correct errors in algorithms and programs
- 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
- 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.

Our Cycles of Learning

Cycle A	Autumn		Spring		Summer	
Maple Preschool Reception	<p>At Fladbury CE First School, we encourage children in The Early Years to think carefully about and explore the world around them. This includes the place of technology within our ever-changing world. Children are given opportunities to use and explore technology such as cameras, computers and tablets for real-life, useful purposes. Children are also taught about the importance of keeping safe online and given the tools and knowledge they need to do this.</p> <p style="text-align: right;">(See Early Years Curriculum)</p>					
Elm Year 1/2	Y1 Computing Systems and Networks Technology around us	Y1 Creating Media Digital Painting	Y1 Programming A Moving a Robot	Y1 Data and Information Grouping Data	Y1 Creating Media Digital Writing	Y1 Programming B Programming animations
Oak Year 3/4	Y4 Computing Systems and Networks The Internet	Y4 Programming A Repetition in Shapes	Y4 Creating Media Audio Production	Y4 Creating Media Photo Editing	Y4 Programming B Repetition in Games	Y4 Data and Information Data Logging

Cycle B	Autumn		Spring		Summer	
Maple Preschool Reception	<p>At Fladbury CE First School, we encourage children in The Early Years to think carefully about and explore the world around them. This includes the place of technology within our ever-changing world. Children are given opportunities to use and explore technology such as cameras, computers and tablets for real-life, useful purposes. Children are also taught about the importance of keeping safe online and given the tools and knowledge they need to do this.</p> <p style="text-align: right;">(See Early Years Curriculum)</p>					
Elm Year 1/2	Y2 Computing Systems and Networks IT Around Us	Y2 Creating Media Digital Photography	Y2 Programming A Robot Algorithms	Y2 Data and Information Pictograms	Y2 Creating Media Digital Music	Y2 Programming B Programing Quizzes
Oak Year 3/4	Y3 Computing Systems and Networks Connecting Computers	Y3 Creating Media Stop-Frame Animation	Y3 Programming A Sequencing Sounds	Y3 Data and Information Branching Databases	Y3 Creating Media Desktop Publishing	Y3 Programming B Events and Actions in Programs

Digital Literacy

	Key Stage One	Lower Key Stage Two
Knowledge	<ul style="list-style-type: none"> Use technology safely and respectfully, keeping personal information private. Identify where to go for help and support when they have concerns about content on the internet or other online technologies. 	<ul style="list-style-type: none"> Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour. Identify a range of ways to report concerns about content and contact. Use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content.
Skills	<ul style="list-style-type: none"> Pupils learn that the internet is a great place to develop rewarding online relationships and learn to recognise websites that are good for them to visit; but they also learn to be cautious and to check with a trusted adult before sharing private information. Pupils are introduced to the concept that real people send messages to one another on the Internet and learn how messages are sent and received. They recognise that it may be difficult to distinguish between someone who is real and someone who is not. Pupils are introduced to the basics of online searching. Pupils learn to explore websites and to say whether they like them or not and why. 	<ul style="list-style-type: none"> Pupils reflect on their own digital footprint and behaviour online. Pupils identify what is appropriate and inappropriate behaviour on the internet, recognising the term cyberbullying. Pupils agree and follow sensible online safety rules, e.g. taking pictures, sharing information, storing passwords. Pupils seek help from an adult when they see something that is unexpected or worrying. Pupils demonstrate understanding of age-appropriate websites and adverts. Pupils are introduced to the basics of online searching, including how to use effective keywords. They also learn to conduct searches that provide them with the most helpful and relevant information.
Vocabulary	<p>Rules Online Private information Email Appropriate/ inappropriate sites Cyber-bullying Digital footprint Keyword</p>	<p>Safe Meet Accept Reliable Tell Online Trusted Adult Information Safety</p> <p>World Wide Web Communicate Message Social media Email Password Personal Internet Cyberbullying Plagiarism</p> <p>Profiles Account Private Public</p>

Computer Science

	Key Stage One	Lower Key Stage Two	
Knowledge	<ul style="list-style-type: none"> Understand what algorithms are; how they are implemented as programs on digital devices and that programs execute by following precise and unambiguous instructions Create and debug simple programs Use logical reasoning to predict the behaviour of simple programs Recognise common uses of information technology beyond school 	<ul style="list-style-type: none"> Design, write and debug programs that accomplish specific goals, solve problems by decomposing them in smaller parts. Use sequence, selection and repetition in programs. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. 	
Skills	<ul style="list-style-type: none"> Pupils learn to program a basic floor Bee Bot to complete task with given instructions. Pupils learn about some of the uses of the internet. 	Pupils use Scratch to: <ul style="list-style-type: none"> Learn to use graphical programming language. Sequence instructions to create an animation, through a simple algorithm. Use variables to create an effect, e.g. repetition, if, when, loop. 	
Vocabulary	Instructions Buttons Robots Patterns Program Forward Backward Right-angle turn Algorithm Sequence Debug Predict	Decompose Decomposing Logical sequence Flowchart Sprite Block Command Algorithm Answer Correct Errors Program Blog	Instructions Commands Forward Left Right Move Turn Mail Share Variable Clear screen

Information Technology

	Key Stage One	Lower Key Stage Two			
Knowledge	<ul style="list-style-type: none"> Use technology purposefully to create, organise, store, manipulate and retrieve digital content 	<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. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. 			
Skills	<ul style="list-style-type: none"> Digital Publishing: Pupils learn to use basic word processing package and to write and illustrate a short story Presentation: Pupils learn to make simple presentations Graphics: Pupils learn to create a simple digital painting Animations: Pupils learn to make a simple animation for instance in Puppet Pals Media: Pupils learn to use digital cameras and microphones for a purpose Working with data: Pupils learn to create and use a pictogram 	<ul style="list-style-type: none"> Digital Publishing: Pupils learn how to use software to create an e-book, brochure or poster on a given subject. Presentations: Pupils learn to write and deliver a presentation on a given subject. Graphics: Pupils learn how to take, adapt or create images to enhance or further develop their work. Animations: Pupils learn how to develop a storyboard and then create a simple animation using for instance 'Puppet Pals' or 'Stop Motions' Animation'. Sound and video: Pupils record and edit media to create a short sequence. Working with data: Pupils learn to search, sort and graph information. 			
Vocabulary	Camer Sounds Image bank Word bank Space bar Paint effects Templates Animation Documents Type Enter/return Caps lock Backspace Photographs Video	Data Pictogram Digitally Save Retrieve	Filter Google Search engine Image Keyboard Email Subject Address Communicate Sender Safe Secure Internet World wide web Social media Font	Text Box Format Image Hyperlink Minimise Restore Organise File Folder Close Exit Search Print Password Snipping tool	Redo Menu Highlight Toolbar Spellcheck Insert Digital content Graphics Bold Italic Underline Align Database Email Send Reply Size Undo

Unit End Points

By the end of each Year 1 unit, children will be able to...

<p>Technology Around us:</p> <ul style="list-style-type: none"> • identify technology • identify a computer and its main parts • use a mouse in different ways • use a keyboard to type on a computer • use the keyboard to edit text • create rules for using technology responsibly 	<p>Digital Paining</p> <ul style="list-style-type: none"> • describe what different freehand tools do • use the shape tool and the line tools • make careful choices when painting a digital picture • explain why I chose the tools I used • use a computer on my own to paint a picture • compare painting a picture on a computer and on paper 	<p>Moving a Robot</p> <ul style="list-style-type: none"> • explain what a given command will do • act out a given word • combine 'forwards' and 'backwards' commands to make a sequence • combine four direction commands to make sequences • plan a simple program • find more than one solution to a problem 	<p>Grouping Data</p> <ul style="list-style-type: none"> • label objects • identify that objects can be counted • describe objects in different ways • count objects with the same properties • compare groups of objects • answer questions about groups of objects 	<p>Digital Writing</p> <ul style="list-style-type: none"> • use a computer to write • add and remove text on a computer • identify that the look of text can be changed on a computer • make careful choices when changing text • explain why I used the tools that I chose • compare typing on a computer to writing on paper 	<p>Programming Animations</p> <ul style="list-style-type: none"> • choose a command for a given purpose • show that a series of commands can be joined together • identify the effect of changing a value • explain that each sprite has its own instructions • design the parts of a project • use my algorithm to create a program
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By the end of each Year 2 unit, children will be able to...

<p>IT Around Us</p> <ul style="list-style-type: none"> • recognise the uses and features of information technology • identify the uses of information technology in the school • identify information technology beyond school • explain how information technology helps us • explain how to use information technology safely • recognise that choices are made when using information technology 	<p>Digital Photography</p> <ul style="list-style-type: none"> • use a digital device to take a photograph • make choices when taking a photograph • describe what makes a good photograph • decide how photographs can be improved • use tools to change an image • recognise that photos can be changed 	<p>Robot Algorithms</p> <ul style="list-style-type: none"> • describe a series of instructions as a sequence • explain what happens when we change the order of instructions • use logical reasoning to predict the outcome of a program • explain that programming projects can have code and artwork • design an algorithm • create and debug a program that I have written 	<p>Pictograms</p> <ul style="list-style-type: none"> • recognise that we can count and compare objects using tally charts • recognise that objects can be represented as pictures • create a pictogram • select objects by attribute and make comparisons • recognise that people can be described by attributes • explain that we can present information using a computer 	<p>Making Music</p> <ul style="list-style-type: none"> • say how music can make us feel • identify that there are patterns in music • experiment with sound using a computer • use a computer to create a musical pattern • create music for a purpose • review and refine our computer work 	<p>Programming Quizzes</p> <ul style="list-style-type: none"> • explain that a sequence of commands has a start • explain that a sequence of commands has an outcome • create a program using a given design • change a given design • create a program using my own design • decide how my project can be improved
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Unit End Points

By the end of each Year 3 unit, children will be able to...

<p>Connecting Computers</p> <ul style="list-style-type: none"> • explain how digital devices function • identify input and output devices • recognise how digital devices can change the way that we work • explain how a computer network can be used to share information • explore how digital devices can be connected • recognise the physical components of a network 	<p>Stop-Frame Animation</p> <ul style="list-style-type: none"> • explain that animation is a sequence of drawings or photographs • relate animated movement with a sequence of images • plan an animation • identify the need to work consistently and carefully • review and improve an animation • evaluate the impact of adding other media to an animation 	<p>Sequencing Sounds</p> <ul style="list-style-type: none"> • explore a new programming environment • identify that commands have an outcome • explain that a program has a start • recognise that a sequence of commands can have an order • change the appearance of my project • create a project from a task description 	<p>Branching Databases</p> <ul style="list-style-type: none"> • create questions with yes/no answers • identify the attributes needed to collect data about an object • create a branching database • explain why it is helpful for a database to be well structured • plan the structure of a branching database • independently create an identification tool 	<p>Desktop Publishing</p> <ul style="list-style-type: none"> • recognise how text and images convey information • recognise that text and layout can be edited • choose appropriate page settings • add content to a desktop publishing publication • consider how different layouts can suit different purposes • consider the benefits of desktop publishing 	<p>Events and Actions in Programs</p> <ul style="list-style-type: none"> • explain how a sprite moves in an existing project • create a program to move a sprite in four directions • adapt a program to a new context • develop my program by adding features • identify and fix bugs in a program • design and create a maze-based challenge
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By the end of each Year 4 unit, children will be able to...

<p>The Internet</p> <ul style="list-style-type: none"> • describe how networks physically connect to other networks • recognise how networked devices make up the internet • outline how websites can be shared via the World Wide Web (WWW) • describe how content can be added and accessed on the World Wide Web (WWW) • recognise how the content of the WWW is created by people • evaluate the consequences of unreliable content 	<p>Audio Production</p> <ul style="list-style-type: none"> • identify that sound can be recorded • explain that audio recordings can be edited • recognise the different parts of creating a podcast project • apply audio editing skills independently • combine audio to enhance my podcast project • evaluate the effective use of audio 	<p>Repetition in Shapes</p> <ul style="list-style-type: none"> • identify that accuracy in programming is important • create a program in a text-based language • explain what 'repeat' means • modify a count-controlled loop to produce a given outcome • decompose a task into small steps • create a program that uses count-controlled loops to produce a given outcome 	<p>Data logging</p> <ul style="list-style-type: none"> • explain that data gathered over time can be used to answer questions • use a digital device to collect data automatically • explain that a data logger collects 'data points' from sensors over time • recognise how a computer can help us analyse data • identify the data needed to answer questions • use data from sensors to answer questions 	<p>Photo Editing</p> <ul style="list-style-type: none"> • explain that the composition of digital images can be changed • explain that colours can be changed in digital images • explain how cloning can be used in photo editing • explain that images can be combined • combine images for a purpose • evaluate how changes can improve an image 	<p>Repetition in Games</p> <ul style="list-style-type: none"> • develop the use of count-controlled loops in a different programming environment • explain that in programming there are infinite loops and count-controlled loops • develop a design that includes two or more loops which run at the same time • modify an infinite loop in a given program • design a project that includes repetition • create a project that includes repetition
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Support

STEM	STEM: Computing resources linked to NC objectives. Teaching notes, activities and worksheet to enable to complete objectives not just on digital devices.
Twinkl	Planit Computing scheme of work (Twinkl) for help with resources/planning/progression.
Childnet	Childnet International, a non-profit organisation working with others to help make the internet a great and safe place for children.

Vocabulary: Glossary of Terms and Progressive Vocabulary

Digital Literacy	Individual's ability to find, evaluate and compose clear information through writing and other mediums on various digital platforms
Computer Science	It is the study of both computer hardware and software design. It encompasses both the study of theoretical algorithms and the practical problems involved in implementing them through computer hardware and software.
Information Technology	It is the use of computers to store, retrieve, transmit and manipulate data or information, often in the context of a business or other enterprise.
Data	A structured set of numbers, representing digitised text, images, sound or video, which can be processed or transmitted by a computer.
Debug	The process of identifying and removing errors from instructions or programs
Program	A stored set of instructions encoded in a language understood by the computer that does some form of computation, processing input and/or stored data to generate output.
Information	The meaning or interpretation given to a set of data by its users or which results from data being processed
Internet	The global collection of computer networks and their connections, all using shared protocols (TCP/IP transmission to control protocol/internet protocol) to communicate.
e-safety	This is how to make sure you are safe when using the internet
Web Browser	This is an application used to access and view websites. Eg. Google Chrome or Microsoft Edge
World Wide Web	A service provided by computers connected to the internet (web servers), in which pages of hypertext (web pages) are transmitted to users; the pages typically include links to other web pages and may be generated by programs automatically.
Software	Computer programs, including both application software (such as office programs, web browsers, media editors and games) and the computer operating system. The term also applies to 'apps' running on mobile devices and to web-based services
Hardware	The machines, wiring and other physical components of a computer or other electronic system.