Fladbury

Church of England **Primary School** and **Preschool**

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
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.	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.	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). 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.

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
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. 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. 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.	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.	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.

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 and deliver parent workshops about online safety.

National Curriculum

Early Years	Key Stage One	Key Stage Two
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	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	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 Curriculum

Teach Computing

As a school, we use the Teach Computing Curriculum and have carefully adapted it to meet the needs of our mixed-age classes.

We have chosen to adopt the Teach Computing curriculum because it is government funded, thoroughly tested by teachers and is grounded in the latest research. There is a huge library of high quality teaching resources across multiple units for each year group – all of which are mapped against the National Curriculum for Computing. Each unit is progressive and has opportunities to be adapted to suit all abilities. There are also a lot of 'unplugged' lessons which give children a concrete foundation on which to lay their future knowledge.

Adaptive Teaching

Fladbury CE First School has a robust approach to adaptive teaching, ensuring that all children receive an education that responds to their strengths and needs. The use of scaffolding techniques allows teachers to break down complex concepts into manageable chunks, providing children with the support they need to work towards the same objectives as their peers. Visual resources such as word banks, diagrams and flash cards are often used in lessons to support all children to meet their learning objectives. Our school also embraces technology, utilising educational software such as Clickr and Widgit that engage children and provide opportunities for personalised learning. Additionally, active learning strategies, such as collaborative projects and hands-on activities, encourage children to engage with their lessons, fostering both peer interaction and critical thinking skills. Teachers ensure that children have access to practical concrete resources to further support their understanding and to give alternate ways of finding solutions to problems. Modelling is another critical strategy used by teachers, where they demonstrate thought processes and outline how they would complete a task to meet the learning objective. This allows children to observe and understand what they are working towards.

Through this multifaceted approach, Fladbury CE First School creates an inclusive learning environment where every child is supported in their educational journey, promoting not only academic success but also a lifelong love for learning.

Our Cycles of Learning

Cycle A	Autumn		Spring		Summer	
Wye Preschool Reception	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. **(See Early Years Curriculum)**					
Avon Year 1/2	**Y1 Computing Systems and Networks** Technology around us	**Y2 Computing Systems and Networks** IT Around Us	**Y1 Programming A** Moving a Robot	**Y2 Programming A** Robot Algorithms	**Y1 Creating Media** Digital Writing	**Y2 Creating Media** Digital Music
Teme Year 3/4	**Y3 Creating Media** Stop-Frame Animation	**Y4 Creating Media** Audio Production	**Y3 Data and Information** Branching Databases	**Y4 Data and Information** Data Logging	**Y3 Programming B** Events and Actions in Programs	**Y4 Programming B** Repetition in Games
Severn Year 5/6	**Y5 Creating Media** Video Production	**Y6 Creating Media** Web Page Creation	**Y5 Data and Information** Flat-file Databases	**Y6 Data and Information** Introduction to Spreadsheets	**Y5 Programming B** Selection in Quizzes	**Y6 Programming B** Sensing Movement

Our Cycles of Learning

Cycle B	Autumn		Spring		Summer	
Wye Preschool Reception	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. **(See Early Years Curriculum)**					
Avon Year 1/2	**Y1 Creating Media** Digital Painting	**Y2 Creating Media** Digital Photography	**Y1 Data and Information** Grouping Data	**Y2 Data and Information** Pictograms	**Y1 Programming B** Programming animations	**Y2 Programming B** Programing Quizzes
Teme Year 3/4	**Y3 Computing Systems and Networks** Connecting Computers	**Y4 Computing Systems and Networks** The Internet	**Y3 Programming A** Sequencing Sounds	**Y4 Programming A** Repetition in Shapes	**Y3 Creating Media** Desktop Publishing	**Y4 Creating Media** Photo Editing
Severn Year 5/6	**Y5 Computing Systems and Networks** Systems and Searching	**Y6 Computing Systems and Networks** Communication and Collaboration	**Y5 Programming A** Selection in Physical Computing	**Y6 Programming A** Variables in Games	**Y5 Creating Media** Introduction to Vector Graphics	**Y6 Creating Media** 3D Modelling

Assessment

Assessing children in computing is a vital part of their education, ensuring that they develop the necessary skills to understand and use technology effectively. The process of assessment is not only about measuring their ability to use digital tools but also about fostering critical thinking, problem-solving, and creativity. Teachers use unit end points and the computing strands from the national curriculum to assess computing.

Teachers continuously observe students' understanding and skills as they work on tasks. In computing, this might involve:
Classroom observations: Teachers assess how children interact with technology and apply computing concepts in line with the learning objectives throughout each lesson.
Discussions: Teachers can hold group or one-on-one discussions with students to gauge their conceptual understanding of computing topics.
Project-Based Work: Children may work on projects and teachers assess how well they their computing knowledge.
Peer Assessment: : Students assessing each other's work. This fosters collaboration and provides an opportunity for feedback.
Self-Assessment: Children reflect on their own learning, identifying strengths and areas for improvement in their understanding of computing concepts. Self-assessment encourages independence and self-regulation.
Challenges: Children are given problems or tasks to complete and the assessment focuses on how well they apply their computing knowledge.
Digital Citizenship: Children are tested on their understanding of online safety, responsible use of technology, and ethical issues like plagiarism, privacy, and cyberbullying through quizzes and discussions.

Teachers will use the learning objectives for each lesson as well as the unit end points outlined on the following pages to measure whether children are working at the expected level of their year group.

Digital Literacy

	Key Stage One	Key Stage Two
Knowledge	• 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.	• 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	• 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.	• 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	Rules Online Private information Email Appropriate/ inappropriate sites Cyber-bullying Digital footprint Keyword	Safe Meet Accept Reliable Tell Online Trusted Adult Information Safety World Wide Web Communicate Message Social media Email Password Personal Internet Cyberbullying Plagiarism Profiles Account Private Public

Computer Science

	Key Stage One	Key Stage Two
Knowledge	• 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	• 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	• 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: • 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	Key Stage Two
Knowledge	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content	• 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	• 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	• 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…

Technology Around Us

- I can explain how these technology examples help us
- I can explain technology as something that helps us
- I can locate examples of technology in the classroom
- I can name the main parts of a computer
- I can switch on and log into a computer
- I can use a mouse to click and drag
- I can click and drag to make objects on a screen
- I can use a mouse to create a picture
- I can use a mouse to open a program
- I can save my work to a file
- I can say what a keyboard is for
- I can type my name on a computer -I can delete letters
- I can open my work from a file
- I can use the arrow keys to move the cursor
- I can discuss how we benefit from these rules
- I can give examples of some of these rules
- I can identify rules to keep us safe and healthy when we are using technology in and beyond the home

Digital Painting

- I can draw lines on a screen and explain which tools I used
- I can make marks on a screen and explain which tools I used
- I can use the paint tools to draw a picture
- I can make marks with the square and line tools
- I can use the shape and line tools effectively
- I can use the shape and line tools to recreate the work of an artist
- I can choose appropriate shapes
- I can create a picture in the style of an artist
- I can make appropriate colour choices
- I can choose appropriate paint tools and colours to recreate the work of an artist
- I can say which tools were helpful and why
- I know that different paint tools do different jobs
- I can explain that pictures can be made in lots of different ways
- I can say whether I prefer painting using a computer or using paper
- I can spot the differences between painting on a computer and on paper

Moving a Robot

- I can match a command to an outcome
- I can predict the outcome of a command on a device
- I can run a command on a device
- I can follow an instruction
- I can give directions
- I can recall words that can be acted out
- I can compare forwards and backwards movements
- I can predict the outcome of a sequence involving forwards and backwards commands
- I can start a sequence from the same place
- I can compare left and right turn
- I can experiment with turn and move commands to move a robot
- I can predict the outcome of a sequence involving up to four commands
- I can choose the order of commands in a sequence
- I can debug my program
- I can explain what my program should do
- I can identify several possible solutions
- I can plan two programs
- I can use two different programs to get to the same place

Grouping Data

- I can describe objects using labels
- I can identify the label for a group of objects
- I can match objects to groups
- I can count a group of objects
- I can count objects
- I can describe an object
- I can describe a property of an object
- I can find objects with similar properties
- I can count how many objects share a property
- I can group objects in more than one way
- I can group similar objects
- I can choose how to group objects
- I can describe groups of objects
- I can record how many objects are in a group
- I can compare groups of objects
- I can decide how to group objects to answer a question
- I can record and share what I have found

Digital Writing

- I can identify and find keys on a keyboard
- I can open a word processor
- I can recognise keys on a keyboard
- I can enter text into a computer
- I can use backspace to remove text
- I can use letter, number, and space keys
- I can explain what the keys that I have learnt about already do
- I can identify the toolbar and use bold, italic, and underline
- I can type capital letters
- I can change the font
- I can select all of the text by clicking and dragging
- I can select a word by double-clicking
- I can decide if my changes have improved my writing
- I can say what tool I used to change the text
- I can use ‘undo’ to remove changes
- I can explain the differences between typing and writing
- I can make changes to text on a computer
- I can say why I prefer typing or writing

Programming

- I can compare different programming tools
- I can find which commands to move a sprite
- I can use commands to move a sprite
- I can run my program
- I can use a Start block in a program
- I can use more than one block by joining them together
- I can change the value
- I can find blocks that have numbers
- I can say what happens when I change a value
- I can add blocks to each of my sprite
- I can delete a sprite
- I can show that a project can include more than one sprite
- I can choose appropriate artwork for my project
- I can create an algorithm for each sprite
- I can decide how each sprite will move
- I can add programming blocks based on my algorithm
- I can test the programs I have created
- I can use sprites that match my design

Unit End Points

By the end of each Year 2 unit, children will be able to…

IT Around Us

- I can describe some uses of computers
- I can identify examples of computer
- I can identify that a computer is a part of IT
- I can identify examples of IT
- I can identify that some IT can be used in more than one way
- I can sort school IT by what it's used for -I can find examples of information technology
- I can sort IT by where it is found
- I can talk about uses of information technology
- I can demonstrate how IT devices work together
- I can recognise common types of technology
- I can say why we use IT
- I can list different uses of information technology
- I can say how rules can help keep me safe
- I can talk about different rules for using IT -I can explain the need to use IT in different way
- I can identify the choices that I make when using IT
- I can use IT for different types of activities

Digital Photography

- I can explain what I did to capture a digital photo
- I can recognise what devices can be used to take photographs
- I can talk about how to take a photograph
- I can explain the process of taking a good photograph
- I can explain why a photo looks better in portrait or landscape format
- I can take photos in both landscape and portrait format -I can discuss how to take a good photograph
- I can identify what is wrong with a photograph
- I can improve a photograph by retaking it
- I can experiment with different light sources
- I can explain why a picture may be unclear
- I can explore the effect that light has on a photo -I can explain my choices
- I can recognise that images can be changed
- I can use a tool to achieve a desired effect
- I can apply a range of photography skills to capture a photo
- I can identify which photos are real and which have been changed
- I can recognise which photos have been changed

Robot Algorithms

- I can choose a series of words that can be enacted as a sequence
- I can follow instructions given by someone else
- I can give clear instruction
- I can show the difference in outcomes between two sequences that consist of the same commands
- I can use an algorithm to program a sequence on a floor robot
- I can use the same instructions to create different algorithms -I can compare my prediction to the program outcome
- I can follow a sequence
- I can predict the outcome of a sequence
- I can explain the choices I made for my mat design
- I can identify different routes around my mat
- I can test my mat to make sure that it is usable
- I can create an algorithm to meet my goal
- I can explain what my algorithm should achieve
- I can use my algorithm to create a program
- I can plan algorithms for different parts of a task
- I can put together the different parts of my program
- I can test and debug each part of the program

Pictograms

- I can compare totals in a tally chart
- I can record data in a tally chart
- I can represent a tally count as a total
- I can enter data onto a computer
- I can use a computer to view data in a different format
- I can use pictograms to answer simple questions about object
- I can explain what the pictogram shows
- I can organise data in a tally chart
- I can use a tally chart to create a pictogram
- I can answer 'more than'/'less than' and 'most/least' questions about an attribute
- I can create a pictogram to arrange objects by an attribute
- I can tally objects using a common attribute -I can choose a suitable attribute to compare people
- I can collect the data I need
- I can create a pictogram and draw conclusions from it
- I can give simple examples of why information should not be shared
- I can share what I have found out using a computer
- I can use a computer program to present information in different ways

Making Music

- I can describe music using adjectives
- I can identify simple differences in pieces of music
- I can say what I do and don't like about a piece of music
- I can create a rhythm pattern
- I can explain that music is created and played by humans
- I can play an instrument following a rhythm pattern
- I can connect images with sounds
- I can relate an idea to a piece of music
- I can use a computer to experiment with pitch
- I can explain how my music can be played in different ways
- I can identify that music is a sequence of note
- I can refine my musical pattern on a computer
- I can add a sequence of notes to my rhythm
- I can create a rhythm which represents an animal I've chosen
- I can create my animal's rhythm on a computer -I can explain how I changed my wor
- I can listen to music and describe how it makes me feel
- I can review my work

Programming Quizzes

- I can identify that a program needs to be started
- I can identify the start of a sequence
- I can show how to run my program
- I can change the outcome of a sequence of commands
- I can match two sequences with the same outcome
- I can predict the outcome of a sequence of commands
- I can build the sequences of blocks I need
- I can decide which blocks to use to meet the design
- I can work out the actions of a sprite in an algorithm
- I can choose backgrounds for the design
- I can choose characters for the design
- I can create a program based on the new design
- I can build sequences of blocks to match my design
- I can choose the images for my own design
- I can create an algorithm
- I can compare my project to my design
- I can debug my program
- I can improve my project by adding features

Unit End Points

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

Connecting Computers

- I can explain that digital devices accept inputs
- I can explain that digital devices produce output
- I can follow a process
- I can classify input and output devices
- I can describe a simple process
- I can design a digital device
- I can explain how I use digital devices for different activities
- I can recognise similarities between using digital devices and non-digital tools
- I can suggest differences between using digital devices and non-digital tools
- I can discuss why we need a network switch
- I can explain how messages are passed through multiple connections
- I can recognise different connections
- I can demonstrate how information can be passed between devices
- I can explain the role of a switch, server, and wireless access point in a network
- I can recognise that a computer network is made up of a number of devices - I can identify how devices in a network are connected together
- I can identify networked devices around me
- I can identify the benefits of computer networks

Stop-Frame Animation

- I can create an effective flip book—style animation
- I can draw a sequence of picture
- I can explain how an animation/flip book works
- I can create an effective stop-frame animation
- I can explain why little changes are needed for each frame
- I can predict what an animation will look like
- I can break down a story into settings, characters and events
- I can create a storyboard
- I can describe an animation that is achievable on screen
- I can evaluate the quality of my animation
- I can review a sequence of frames to check my work
- I can use onion skinning to help me make small changes between frames
- I can evaluate another learner's animation
- I can explain ways to make my animation better
- I can improve my animation based on feedback
- I can add other media to my animation
- I can evaluate my final film
- I can explain why I added other media to my animation

Sequencing Sounds

- I can explain that objects in Scratch have attributes (linked to)
- I can identify the objects in a Scratch project (sprites, backdrops)
- I can recognise that commands in Scratch are represented as blocks
- I can choose a word which describes an on-screen action for my plan
- I can create a program following a design
- I can identify that each sprite is controlled by the commands I choose
- I can create a sequence of connected commands
- I can explain that the objects in my project will respond exactly to the code
- I can start a program in different ways
- I can combine sound commands
- I can explain what a sequence is
- I can order notes into a sequence
- I can build a sequence of commands
- I can decide the actions for each sprite in a program
- I can make design choices for my artwork
- I can identify and name the objects I will need for a project
- I can implement my algorithm as code
- I can relate a task description to a design

Branching Databases

- I can create two groups of objects separated by one attribute
- I can investigate questions with yes/no answers
- I can make up a yes/no question about a collection of objects
- I can arrange objects into a tree structure
- I can create a group of objects within an existing group
- I can select an attribute to separate objects into groups
- I can group objects using my own yes/no questions
- I can select objects to arrange in a branching database
- I can test my branching database to see if it works
- I can compare two branching database structures
- I can create yes/no questions using given attributes
- I can explain that questions need to be ordered carefully to split objects into similarly sized groups
- I can create a physical version of a branching database
- I can create questions that will enable objects to be uniquely identified
- I can independently create questions to use in a branching database
- I can create a branching database that reflects my plan
- I can suggest real-world uses for branching databases
- I can work with a partner to test my identification tool

Desktop Publishing

- I can explain the difference between text and images
- I can identify the advantages and disadvantages of using text and images
- I can recognise that text and images can communicate messages clearly
- I can change font style, size, and colours for a given purpose
- I can edit text
- I can explain that text can be changed to communicate more clearly
- I can create a template for a particular purpose
- I can define the term 'page orientation'
- I can recognise placeholders and say why they are important
- I can choose the best locations for my content
- I can make changes to content after I've added it
- I can paste text and images to create a magazine cover
- I can choose a suitable layout for a given purpose
- I can identify different layouts
- I can match a layout to a purpose
- I can compare work made on desktop publishing to work created by hand
- I can identify the uses of desktop publishing in the real world
- I can say why desktop publishing might be helpful

Events and Actions in Programs

- I can choose which keys to use for actions and explain my choices
- I can explain the relationship between an event and an action
- I can identify a way to improve a program
- I can choose a character for my project
- I can choose a suitable size for a character in a maze
- I can program movement
- I can choose blocks to set up my program
- I can consider the real world when making design choices
- I can use a programming extension
- I can build more sequences of commands to make my design work
- I can choose suitable keys to turn on additional feature
- I can identify additional features (from a given set of blocks) -I can match a piece of code to an outcome
- I can modify a program using a design
- I can test a program against a given design
- I can evaluate my project
- I can implement my design
- I can make design choices and justify them

Unit End Points

By the end of each Year 4 unit, children will be able to…

The Internet

- I can demonstrate how information is shared across the internet
- I can describe the internet as a network of networks
- I can discuss why a network needs protecting
- I can describe networked devices and how they connect
- I can explain that the internet is used to provide many services
- I can recognise that the World Wide Web contains websites and web pages
- I can describe how to access websites on the WWW
- I can describe where websites are stored when uploaded to the WWW
- I can explain the types of media that can be shared on the WWW
- I can explain that internet services can be used to create content online
- I can explain what media can be found on websites
- I can recognise that I can add content to the WWW
- I can explain that there are rules to protect content
- I can explain that websites and their content are created by people I can suggest who
- I can explain that not everything on the World Wide Web is true
- I can explain why I need to think carefully before I share or reshare content
- I can explain why some information I find online may not be honest, accurate, or legal

Audio Production

- I can explain that the person who records the sound can say who is allowed to use it
- I can identify the input and output devices used to record and play sound
- I can use a computer to record audio
- I can discuss what sounds can be added to a podcast
- I can inspect the soundwave view to know where to trim my recording
- I can re-record my voice to improve my recording -I can explain how sounds can be combined to make a podcast more engaging
- I can plan appropriate content for a podcast
- I can save my project so the different parts remain editable
- I can improve my voice recordings
- I can record content following my plan
- I can review the quality of my recordings
- I can arrange multiple sounds to create the effect I want
- I can explain the difference between saving a project and exporting an audio file
- I can open my project to continue working on it -I can choose appropriate edits to improve my podcast
- I can listen to an audio recording to identify its strengths
- I can suggest improvements to an audio recording

Repetition in Shapes

- I can create a code snippet for a given purpose
- I can explain the effect of changing a value of a command
- I can program a computer by typing commands -I can test my algorithm in a text-based language
- I can use a template to create a design for my program
- I can write an algorithm to produce a given outcome -I can identify everyday tasks that include repetition as part of a sequence, eg brushing teeth, dance moves
- I can identify patterns in a sequence
- I can use a count-controlled loop to produce a given outcome
- I can choose which values to change in a loop
- I can identify the effect of changing the number of times a task is repeated
- I can predict the outcome of a program containing a count-controlled loop
- I can explain that a computer can repeatedly call a procedure
- I can identify ‘chunks’ of actions in the real world
- I can use a procedure in a program
- I can design a program that includes count-controlled loops
- I can develop my program by debugging it
- I can make use of my design to write a program

Data logging

- I can choose a data set to answer a given question
- I can identify data that can be gathered over time
- I can suggest questions that can be answered using a given data set
- I can explain what data can be collected using sensors
- I can identify that data from sensors can be recorded
- I can use data from a sensor to answer a given question
- I can identify the intervals used to collect data
- I can recognise that a data logger collects data at given points
- I can talk about the data that I have captured
- I can explain that there are different ways to view data
- I can sort data to find information
- I can view data at different levels of detail
- I can plan how to collect data using a data logger
- I can propose a question that can be answered using logged data
- I can use a data logger to collect data
- I can draw conclusions from the data that I have collected
- I can explain the benefits of using a data logger
- I can interpret data that has been collected using a data logger

Photo Editing

- I can explain why I might crop an image
- I can improve an image by rotating it
- I can use photo editing software to crop an image
- I can experiment with different colour effects
- I can explain that different colour effects make you think and feel different things
- I can explain why I chose certain colour effects
- I can add to the composition of an image by cloning
- I can identify how a photo edit can be improved
- I can remove parts of an image using cloning
- I can experiment with tools to select and copy part of an image
- I can explain why photos might be edited
- I can use a range of tools to copy between images
- I can choose suitable images for my project
- I can create a project that is a combination of other images
- I can describe the image I want to create
- I can combine text and my image to complete the project
- I can review images against a given criteria
- I can use feedback to guide making changes

Repetition in Games

- I can list an everyday task as a set of instructions including repetition
- I can modify a snippet of code to create a given outcome
- I can predict the outcome of a snippet of code
- I can choose when to use a count-controlled and an infinite loop
- I can modify loops to produce a given outcome
- I can recognise that some programming languages enable more than one process to be run at once
- I can choose which action will be repeated for each object
- I can evaluate the effectiveness of the repeated sequences used in my program
- I can explain what the outcome of the repeated action should be
- I can explain the effect of my changes
- I can identify which parts of a loop can be changed
- I can re-use existing code snippets on new sprites
- I can develop my own design explaining what my project will do
- I can evaluate the use of repetition in a project
- I can select key parts of a given project to use in my own design
- I can build a program that follows my design
- I can evaluate the steps I followed when building my project
- I can refine the algorithm in my design

Unit End Points

By the end of each Year 5 unit, children will be able to…

Systems and Searching

- I can describe that a computer system features inputs, processes, and outputs
- I can explain that computer systems communicate with other devices
- I can explain that systems are built using a number of parts
- I can explain the benefits of a given computer system
- I can identify tasks that are managed by computer systems
- I can identify the human elements of a computer system
- I can compare results from different search engines
- I can make use of a web search to find specific information
- I can explain why we need tools to find things online
- I can recognise the role of web crawlers in creating an index
- I can relate a search term to the search engine's index
- I can refine my web search
- I can explain that a search engine follows rules to rank result
- I can give examples of criteria used by search engines to rank results
- I can order a list by rank
- I can describe some of the ways that search results can be influenced
- I can explain how search engines make money
- I can recognise some of the limitations of search engines

Video Production

- I can compare features in different videos
- I can explain that video is a visual media format
- I can identify features of videos
- I can experiment with different camera angles
- I can identify and find features on a digital video recording device
- I can make use of a microphone
- I can capture video using a range of filming techniques
- I can review how effective my video I
- I can suggest filming techniques for a given purpose
- I can create and save video content
- I can decide which filming techniques I will use
- I can outline the scenes of my video
- I can explain how to improve a video by reshooting and editing
- I can select the correct tools to make edits to my video
- I can store, retrieve, and export my recording to a computer
- I can evaluate my video and share my opinion
- I can make edits to my video and improve the final outcome
- I can recognise that my choices when making a video will impact on the quality of the final outcome

Selection in Physical Computing

- I can create a simple circuit and connect it to a microcontroller
- I can explain what an infinite loop does
- I can program a microcontroller to make an LED switch on
- I can connect more than one output component to a microcontroller
- I can design sequences that use count-controlled loops
- I can use a count-controlled loop to control outputs
- I can design a conditional loop
- I can explain that a condition is either true or false
- I can program a microcontroller to respond to an input
- I can explain that a condition being met can start an action
- I can identify a condition and an action in my project
- I can use selection (an 'if…then…' statement) to direct the flow of a program
- I can create a detailed drawing of my project
- I can describe what my project will do
- I can identify a real-world example of a condition starting an action
- I can test and debug my project
- I can use selection to produce an intended outcome
- I can write an algorithm that describes what my model will do

Flat-file databases

- I can create a database using cards
- I can explain how information can be recorded
- I can order, sort, and group my data cards
- I can choose which field to sort data by to answer a given question
- I can explain what a field and a record is in a database
- I can navigate a flat-file database to compare different views of information
- I can combine grouping and sorting to answer specific questions
- I can explain that data can be grouped using chosen values
- I can group information using a database
- I can choose multiple criteria to answer a given question
- I can choose which field and value are required to answer a given question
- I can outline how 'AND' and 'OR' can be used to refine data selection
- I can explain the benefits of using a computer to create charts
- I can refine a chart by selecting a particular filter
- I can select an appropriate chart to visually compare data
- I can ask questions that will need more than one field to answer
- I can present my findings to a group
- I can refine a search in a real-world context

Introduction to Vector Graphics

- I can discuss how vector drawings are different from paper-based drawings
- I can experiment with the shape and line tools
- I can recognise that vector drawings are made using shapes
- I can explain that each element added to a vector drawing is an object
- I can identify the shapes used to make a vector drawing
- I can move, resize, and rotate objects I have duplicated
- I can explain how alignment grids and resize handles can be used to improve consistency
- I can modify objects to create a new image
- I can use the zoom tool to help me add detail to my drawings
- I can change the order of layers in a vector drawing
- I can identify that each added object creates a new layer in the drawing
- I can use layering to create an image
- I can copy part of a drawing by duplicating several objects
- I can recognise when I need to group and ungroup objects
- I can reuse a group of objects to further develop my vector drawing
- I can compare vector drawings to freehand paint drawings
- I can create a vector drawing for a specific purpose
- I can reflect on the skills I have used and why I have used them

Selection in Quizzes

- I can identify conditions in a program
- I can modify a condition in a program
- I can recall how conditions are used in selection
- I can create a program with different outcomes using selection
- I can identify the condition and outcomes in an 'if... then… else...' statement
- I can use selection in an infinite loop to check a condition
- I can design the flow of a program which contains 'if… then… else…'
- I can explain that program flow can branch according to a condition
- I can show that a condition can direct program flow in one of two ways
- I can identify the outcome of user input in an algorithm
- I can outline a given task
- I can use a design format to outline my project
- I can implement my algorithm to create the first section of my program
- I can share my program with others
- I can test my program
- I can extend my program further
- I can identify the setup code I need in my program
- I can identify ways the program could be improved

Unit End Points

By the end of each Year 6 unit, children will be able to…

Communication and Collaboration

- I can describe how computers use addresses to access websites
- I can explain that internet devices have addresses
- I can recognise that data is transferred using agreed methods
- I can explain that all data transferred over the internet is in packets
- I can explain that data is transferred over networks in packets
- I can identify and explain the main parts of a data packet
- I can explain that the internet allows different media to be shared
- I can recognise how to access shared files stored online
- I can send information over the internet in different ways
- I can explain how the internet enables effective collaboration
- I can identify different ways of working together online
- I can recognise that working together on the internet can be public or private
- I can choose methods of communication to suit particular purposes
- I can explain the different ways in which people communicate
- I can identify that there are a variety of ways to communicate over the internet
- I can compare different methods of communicating on the internet
- I can decide when I should and should not share information online
- I can explain that communication on the internet may not be private

Web Page Creation

- I can discuss the different types of media used on websites
- I can explore a website
- I know that websites are written in HTML
- I can draw a web page layout that suits my purpose
- I can recognise the common features of a web page
- I can suggest media to include on my page
- I can describe what is meant by the term 'fair use'
- I can find copyright-free images
- I can say why I should use copyright-free images
- I can add content to my own web page
- I can evaluate what my web page looks like on different devices and suggest/make edits
- I can preview what my web page looks like
- can describe why navigation paths are useful
- I can explain what a navigation path is
- I can make multiple web pages and link them using hyperlinks
- I can create hyperlinks to link to other people's work
- I can evaluate the user experience of a website
- I can explain the implication of linking to content owned by others

Variables in Games

- I can explain that the way a variable changes can be defined
- I can identify examples of information that is variable
- I can identify that variables can hold numbers or letters
- I can explain that a variable has a name and a value
- I can identify a program variable as a placeholder in memory for a single value
- I can recognise that the value of a variable can be changed
- I can decide where in a program to change a variable
- I can make use of an event in a program to set a variable
- I can recognise that the value of a variable can be used by a program
- I can choose the artwork for my project
- I can create algorithms for my project
- I can explain my design choices
- I can choose a name that identifies the role of a variable
- I can create the artwork for my project
- I can test the code that I have written
- I can identify ways that my game could be improved
- I can share my game with others
- I can use variables to extend my game

Spreadsheets

- I can collect data
- I can enter data into a spreadsheet
- I can suggest how to structure my data
- I can apply an appropriate format to a cell
- I can choose an appropriate format for a cell
- I can explain what an item of data is
- I can construct a formula in a spreadsheet
- I can explain which data types can be used in calculations
- I can identify that changing inputs changes outputs
- I can apply a formula to multiple cells by duplicating it
- I can calculate data using different operations
- I can create a formula which includes a range of cells
- I can apply a formula to calculate the data I need to answer questions
- I can explain why data should be organised
- I can use a spreadsheet to answer questions
- I can produce a chart
- I can suggest when to use a table or chart
- I can use a chart to show the answer to questions

3D Modelling

- I can add 3D shapes to a project
- I can move 3D shapes relative to one another
- I can view 3D shapes from different perspectives
- I can lift/lower 3D objects
- I can recolour a 3D object
- I can resize an object in three dimensions
- I can duplicate 3D objects
- I can group 3D objects
- I can rotate objects in three dimensions
- I can accurately size 3D objects
- I can combine a number of 3D objects
- I can show that placeholders can create holes in 3D
- I can analyse a 3D model
- I can choose objects to use in a 3D model
- I can combine objects in a design
- I can construct a 3D model based on a design
- I can explain how my 3D model could be improved
- I can modify my 3D model to improve it

Sensing Movement

- I can apply my knowledge of programming to a new environment
- I can test my program on an emulator
- I can transfer my program to a controllable device
- I can determine the flow of a program using selection
- I can identify examples of conditions in the real world
- I can use a variable in an if, then, else statement to select the flow of a program
- I can experiment with different physical inputs
- I can explain that checking a variable doesn't change its value
- I can use a condition to change a variable
- I can explain the importance of the order of conditions in else, if statements
- I can modify a program to achieve a different outcome
- I can use an operand (e.g. <>=) in an if, then statement
- I can decide what variables to include in a project
- I can design the algorithm for my project
- I can design the program flow for my project
- I can create a program based on my design
- I can test my program against my design
- I can use a range of approaches to find and fix bugs

Support	
STEM	STEM: Computing resources linked to NC objectives. Teaching notes, activities and worksheet to enable to complete objectives not just on digital devices.
Teach Computing	The Computing scheme that we use to underpin our Computing curriculum.
Childnet	Childnet International, a non-profit organisation working with others to help make the internet a great and safe place for children.
Kahoot	An online quiz platform – great for games and assessment
Blooket	An online quiz platform – great for games and assessment

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, al 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.