



## Gnosall St Lawrence CE Primary Academy Computing Curriculum Overview

Early Years	Three and Four-Year-Olds	Personal, Social and Emotional Development		Increasingly follow rules, understanding why they are important.
		Physical Development		Match their developing physical skills to tasks and activities in the setting.
		Understanding the World		Explore how things work.
	Reception	Personal, Social and Emotional Development		Show resilience and perseverance in the face of a challenge.
		Physical Development		Develop their small motor skills so that they can use a range of tools competently, safely and confidently.  Know and talk about the different factors that support their overall health and wellbeing: -sensible amounts of 'screen time'.
		Expressive Arts and Design		Explore, use and refine a variety of artistic effects to express their ideas and feelings.
	ELG	Personal, Social and Emotional Development	Managing Self	Be confident to try new activities and show independence, resilience and perseverance in the face of challenge.  Explain the reasons for rules, know right from wrong and try to behave accordingly
		Expressive Arts and Design	Creating with Materials	Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Computing Development Opportunities in Early Years	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Digital devices around me  Exploring digital devices around the classroom. Role play using tech. Using games on the interactive board.		How to go on the internet and stay safe online  Using online games. Talking about what the internet is and what it can be used for. Understanding how to be safe online. Selecting tech for purpose.		Programming Beebots  Ordering simple instructions. Beginning to move Beebots by inserting instructions. Using key words such as forwards and backwards. Combining tech with activities.	

## Expectations of the National Curriculum (Colour coding shows coverage in Gnosall's Computing Curriculum)

<p>Overall Aims of our Computing Curriculum (from NC)</p>	<p><b>Pupils:</b></p> <ul style="list-style-type: none"> <li>♣ can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation</li> <li>♣ can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems</li> <li>♣ can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems</li> <li>♣ are responsible, competent, confident and creative users of information and communication technology.</li> </ul>
<p>End of KS1 Attainment (NC)</p>	<p><b>Pupils:</b></p> <ul style="list-style-type: none"> <li>♣ understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions</li> <li>♣ create and debug simple programs</li> <li>♣ use logical reasoning to predict the behaviour of simple programs</li> <li>♣ use technology purposefully to create, organise, store, manipulate and retrieve digital content</li> <li>♣ recognise common uses of information technology beyond school</li> <li>♣ 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</li> </ul>
<p>End of KS2 Attainment (NC)</p>	<p><b>Pupils:</b></p> <ul style="list-style-type: none"> <li>♣ design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</li> <li>♣ use sequence, selection, and repetition in programs; work with variables and various forms of input and output</li> <li>♣ use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</li> <li>♣ 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</li> <li>♣ use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</li> <li>♣ 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</li> <li>♣ use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</li> </ul>

	2-Year cycle	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Year 1/2	Cycle A	Computing systems and networks Technology around us (Additional E-Safety)	Creating Media Digital Painting	Creating Media Digital photography	Data and information Grouping data	Programming A Moving a Robot	Programming A Robot Algorithms
	Cycle B	Computing systems and networks IT around us (Additional E-Safety)	Creating Media Digital writing	Creating Media Making music	Data and information Pictogram	Programming B Introduction to animation	Programming B Introduction to quizzes
Year 3/4	Cycle A	Computing systems and networks Connecting computer (Additional E-Safety)	Creating Media Animation	Creating Media Desktop Publishing	Data and information Branching Databases	Programming A Repetition in shapes	Programming B Repetition in games
	Cycle B	Computing systems and networks The Internet (Additional E-Safety)	Creating Media Audio editing	Creating Media Photo editing	Data and information Data Logging	Programming A Sequence in music	Programming B Events and actions
Year 5/6	Cycle A	Computing systems and networks Sharing information (Additional E-Safety)	Creating Media 3D Modelling	Creating Media Web page creation	Data and information Flat file databases	Programming A Selection in physical computing	Programming B Selection in quizzes
	Cycle B	Computing systems and networks Communication (Additional E-Safety)	Creating Media Vector drawing	Creating Media Video editing	Data and information Spreadsheets	Programming A Variables in games	Programming B Sensing

## Progression of Skills in Computing

	Year 1 and 2	Year 3 and 4	Year 5 and 6
Computer Systems and Networks / E-safety Aut 1 (Cycle A and B)	<b>Technology Around Us (Cycle A)</b>	<b>Connecting Computers (Cycle A)</b>	<b>Sharing Information (Cycle A)</b>
	<p>To identify technology</p> <p>To identify a computer and its main parts</p> <p>To use a mouse in different ways</p> <p>To use a keyboard to type</p> <p>To use the keyboard to edit text</p> <p>(Additional e-safety includes safe searching, keep it private and my creative work)</p>	<p>To explain how digital devices function</p> <p>To identify input and output devices</p> <p>To recognise how digital devices can change the way we work</p> <p>To explain how a computer network can be used to share information</p> <p>To explore how digital devices can be connected</p> <p>To recognise the physical components of a network</p> <p>To describe how networks physically connect to other networks</p> <p>(Additional e-safety includes online communities, powerful passwords and show respect online)</p>	<p>To explain that computers can be connected together to form systems</p> <p>To recognise the role of computer systems in our lives</p> <p>To recognise how information is transferred over the internet</p> <p>To explain how sharing information online lets people in different places work together</p> <p>To contribute to a shared project online</p> <p>(Additional e-safety includes digital citizenship, picture perfect and strong passwords)</p>
	<b>IT Around Us (Cycle B)</b>	<b>The Internet (Cycle B)</b>	<b>Communication (Cycle B)</b>
	<p>To create rules for using technology responsibly</p> <p>To recognise the uses and features of information technology</p> <p>To identify information technology in the home</p> <p>To identify information technology beyond school</p> <p>To explain how information technology benefits us</p> <p>To show how to use information technology safely</p> <p>To recognise that choices are made when using information technology</p> <p>(Additional e-safety includes digital trails, screen out mean and staying safe online)</p>	<p>To recognise how networked devices make up the internet</p> <p>To outline how websites can be shared via the World Wide Web</p> <p>To describe how content can be added and accessed on the World Wide Web</p> <p>To recognise how the content of the WWW is created by people</p> <p>To evaluate the consequences of unreliable content</p> <p>(Additional e-safety includes personal information, key words and whose is it anyway)</p>	<p>To evaluate different ways of working together online</p> <p>To identify how to use a search engine</p> <p>To describe how search engines select results</p> <p>To explain how search results are ranked</p> <p>To recognise why the order of results is important, and to whom</p> <p>To recognise how we communicate using technology</p> <p>To evaluate different methods of online communication</p> <p>(Additional e-safety includes digital citizenship, picture perfect and strong passwords)</p>

**Digital Painting (Cycle A)**

To describe what different freehand tools do  
 To use the shape tool and the line tools  
 To make careful choices when painting a digital picture  
 To explain why I chose the tools I used  
 To use a computer on my own to paint a picture  
 To compare painting a picture on a computer and on paper

**Digital Writing (Cycle B)**

To use a computer to write  
 To add and remove text on a computer  
 To identify that the look of text can be changed on a computer  
 To make careful choices when changing text  
 To explain why I used the tools that I chose  
 To compare writing on a computer with writing on paper

**Animation (Cycle A)**

To explain that animation is a sequence of drawings or photographs  
 To relate animated movement with a sequence of images  
 To plan an animation  
 To identify the need to work consistently and carefully  
 To review and improve an animation  
 To evaluate the impact of adding other media to an animation

**Audio Editing (Cycle B)**

To identify that sound can be digitally recorded:  
 To use a digital device to record sound:  
 To explain that a digital recording is stored as a file:  
 To explain that audio can be changed through editing:  
 To show that different types of audio can be combined and played together  
 To evaluate editing choices made

**3D Modelling (Cycle A)**

To use a computer to create and manipulate three-dimensional (3D) digital objects  
 To compare working digitally with 2D and 3D graphics  
 To construct a digital 3D model of a physical object  
 To identify that physical objects can be broken down into a collection of 3D shapes  
 To design a digital model by combining 3D objects  
 To develop and improve a digital 3D model

**Vector Drawing (Cycle B)**

To identify that drawing tools can be used to produce different outcomes  
 To create a vector drawing by combining shapes  
 To use tools to achieve a desired effect  
 To recognise that vector drawings consist of layers  
 To group objects to make them easier to work with  
 To evaluate my vector drawing

**Digital Photography (Cycle A)**

- To know what devices can be used to take photographs
- To use a digital device to take a photograph
- To describe what makes a good photograph
- To decide how photographs can be improved
- To use tools to change an image
- To recognise that images can be changed

**Making Music (Cycle B)**

- To say how music can make us feel
- To identify that there are patterns in music
- To describe how music can be used in different ways
- To show how music is made from a series of notes
- To create music for a purpose
- To review and refine our computer work  
(Additional e-safety includes privacy rules, talking safely online and cyberbullying)

**Desktop Publishing (Cycle A)**

- To recognise how text and images convey information
- To recognise that text and layout can be edited
- To choose appropriate page settings
- To add content to a desktop publishing publication
- To consider how different layouts can suit different purposes
- To consider the benefits of desktop publishing

**Photo Editing (Cycle B)**

- To explain that digital images can be changed
- To change the composition of an image
- To describe how images can be changed for different uses
- To make good choices when selecting different tools
- To recognise that not all images are real
- To evaluate how changes can improve an image

**Web Page Creation (Cycle A)**

- To review an existing website and consider its structure
- To plan the features of a web page
- To consider the ownership and use of images (copyright)
- To recognise the need to preview pages
- To outline the need for a navigation path
- To recognise the implications of linking to content owned by other people

**Video Editing (Cycle B)**

- To recognise video as moving pictures, which can include audio
- To identify digital devices that can record video
- To capture video using a digital device
- To recognise the features of an effective video
- To identify that video can be improved through reshooting and editing
- To consider the impact of the choices made when making and sharing a video

**Grouping Data (Cycle A)**

- To label objects
- To identify that objects can be counted
- To describe objects in different ways
- To count objects with the same properties
- To compare groups of objects
- To answer questions about groups of objects
- To recognise that we can count and compare objects using tally charts

**Pictogram (Cycle B)**

- To recognise that objects can be represented as pictures
- To create a pictogram
- To select objects by attribute and make comparisons
- To recognise that people can be described by attributes
- To explain that we can present information using a computer

**Branching Databases (Cycle A)**

- To create questions with yes/no answers
- To identify the object attributes needed to collect relevant data
- To create a branching database
- To identify objects using a branching database
- To explain why it is helpful for a database to be well structured
- To compare the information shown in a pictogram with a branching database

**Logging Data (Cycle B)**

- To explain that data gathered over time can be used to answer questions
- To use a digital device to collect data automatically
- To explain that a data logger collects 'data points' from sensors over time
- To use data collected over a long duration to find information
- To identify the data needed to answer questions
- To use collected data to answer questions

**Flat File Databases (Cycle A)**

- To use a form to record information
- To compare paper and computer-based databases
- To outline how grouping and then sorting data allows us to answer questions
- To explain that tools can be used to select specific data
- To explain that computer programs can be used to compare data visually
- To apply my knowledge of a database to ask and answer real-world questions

**Spreadsheets (Cycle B)**

- To identify questions which can be answered using data
- To explain that objects can be described using data
- To explain that formula can be used to produce calculated data
- To apply formulas to data, including duplicating
- To create a spreadsheet to plan an event
- To choose suitable ways to present data

**Moving a Robot (Cycle A)**

- To explain what a given command will do
- To act out a given word
- To combine forwards and backwards commands to make a sequence
- To combine four direction commands to make sequences

**Introduction to Animation (Cycle B)**

- To plan a simple program
- To find more than one solution to a problem
- To choose a command for a given purpose
- To show that a series of commands can be joined together
- To identify the effect of changing a value
- To explain that each sprite has its own instructions
- To design the parts of a project
- To use my algorithm to create a program

**Repetition in Shapes (Cycle A)**

- To explore a new programming environment
- I can identify that each sprite is controlled by the commands I choose
- To explain that a program has a start
- To recognise that a sequence of commands can have an order
- To change the appearance of my project
- To create a project from a task description
- To identify that accuracy in programming is important

**Sequence in Music (Cycle B)**

- To create a program in a text-based language
- To explain what 'repeat' means
- To modify a count-controlled loop to produce a given outcome
- To decompose a program into parts
- To create a program that uses count-controlled loops to produce a given outcome

**Selection in Physical Computing (Cycle A)**

- To control a simple circuit connected to a computer
- To write a program that includes count-controlled loops
- To explain that a loop can stop when a condition is met, eg number of times
- To conclude that a loop can be used to repeatedly check whether a condition has been met
- To design a physical project that includes selection
- To create a controllable system that includes selection

**Variables in Games (Cycle B)**

- To define a 'variable' as something that is changeable
- To explain why a variable is used in a program
- To choose how to improve a game by using variables
- To design a project that builds on a given example
- To use my design to create a project
- To evaluate my project



**Robot Algorithms (Cycle A)**

- To describe a series of instructions as a sequence
- To explain what happens when we change the order of instructions
- To use logical reasoning to predict the outcome of a program (series of commands)
- To explain that programming projects can have code and artwork
- To design an algorithm
- To create and debug a program that I have written

**Introduction to Quizzes (Cycle B)**

- To explain that a sequence of commands has a start
- To explain that a sequence of commands has an outcome
- To create a program using a given design
- To change a given design
- To create a program using my own design
- To decide how my project can be improved

**Repetition in Games (Cycle A)**

- To develop the use of count-controlled loops in a different programming environment
- To explain that in programming there are infinite loops and count controlled loops
- To develop a design which includes two or more loops which run at the same time
- To modify an infinite loop in a given program
- To design a project that includes repetition
- To create a project that includes repetition

**Events & Actions (Cycle B)**

- To build a sequence of commands
- To order commands in a program
- To explain how a sprite moves in an existing project
- To create a program to move a sprite in four directions
- To adapt a program to a new context
- To develop my program by adding features
- To identify and fix bugs in a program
- To design and create a maze-based challenge

**Selection in Quizzes Cycle A)**

- To explain how selection is used in computer programs
- To relate that a conditional statement connects a condition to an outcome
- To explain how selection directs the flow of a program
- To design a program which uses selection
- To create a program which uses selection
- To evaluate my program

**Sensing (Cycle B)**

- To create a program to run on a controllable device
- To explain that selection can control the flow of a program
- To update a variable with a user input
- To use an conditional statement to compare a variable to a value
- To design a project that uses inputs and outputs on a controllable device
- To develop a program to use inputs and outputs on a controllable device

