



## 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	<b>Autumn 1</b>	<b>Autumn 2</b>	<b>Spring 1</b>	<b>Spring 2</b>	<b>Summer 1</b>	<b>Summer 2</b>
	Digital devices around me  Exploring digital devices around the classroom. Developing initial mouse and keyboard skills on desktops. Role-play using tech such as phones, tills, computers and tablets.  Using games on the interactive board. Listening station with CDs and earphones		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.  Using interactive games/software to sort and organise pictures or numbers. Understanding how to be safe online. Selecting tech (and recognising that tech can be selected) for a purpose such as a CD player to listen, a whiteboard to play an interactive game or a camera (Ipad) to take a picture.		Programming Beebots  Ordering simple instructions. Beginning to move Beebots by inserting instructions. Using key words such as forwards, backwards, turn, stop and start. Combining tech with activities within continuous provision.	

## 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

	EYFS	Year 1 and 2	Year 3 and 4	Year 5 and 6
Computer Systems and Networks / E-safety	<p>Exploring digital devices around the classroom.</p> <p>Developing initial mouse and keyboard skills on desktops.</p> <p>Role-play using tech such as phones, tills, computers and tablets.</p> <p>Using games on the interactive board.</p> <p>Listening station with CDs and earphones</p>	<p style="text-align: center;"><b>Technology Around Us (Cycle A)</b></p> <p>To identify technology                      To identify a computer and its main parts                      To use a mouse in different ways                      To use a keyboard to type                      To use the keyboard to edit text</p> <p>(Additional e-safety includes safe searching, keep it private and my creative work)</p> <p style="text-align: center;"><b>IT Around Us (Cycle B)</b></p> <p>To create rules for using technology responsibly                      To recognise the uses and features of information technology                      To identify information technology in the home                      To identify information technology beyond school                      To explain how information technology benefits us                      To show how to use information technology safely                      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 style="text-align: center;"><b>Connecting Computers (Cycle A)</b></p> <p>To explain how digital devices function                      To identify input and output devices                      To recognise how digital devices can change the way we work                      To explain how a computer network can be used to share information                      To explore how digital devices can be connected                      To recognise the physical components of a network                      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 style="text-align: center;"><b>The Internet (Cycle B)</b></p> <p>To recognise how networked devices make up the internet                      To outline how websites can be shared via the World Wide Web                      To describe how content can be added and accessed on the World Wide Web                      To recognise how the content of the WWW is created by people                      To evaluate the consequences of unreliable content</p> <p>(Additional e-safety includes personal information, key words and whose is it anyway)</p>	<p style="text-align: center;"><b>Sharing Information (Cycle A)</b></p> <p>To explain that computers can be connected together to form systems                      To recognise the role of computer systems in our lives                      To recognise how information is transferred over the internet                      To explain how sharing information online lets people in different places work together                      To contribute to a shared project online</p> <p>(Additional e-safety includes digital citizenship, picture perfect and strong passwords)</p> <p style="text-align: center;"><b>Communication (Cycle B)</b></p> <p>To evaluate different ways of working together online                      To identify how to use a search engine                      To describe how search engines select results                      To explain how search results are ranked                      To recognise why the order of results is important, and to whom                      To recognise how we communicate using technology                      To evaluate different methods of online communication</p> <p>(Additional e-safety includes digital citizenship, picture perfect and strong passwords)</p>

Creating Media A

Talking about what the internet is and what it can be used for.

Understanding how to be safe online.

**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

<b>Creating Media B</b>	Using online games.	<b>Digital Photography (Cycle A)</b>	<b>Desktop Publishing (Cycle A)</b>	<b>Web Page Creation (Cycle A)</b>
	Selecting tech (and recognising that tech can be selected) for a purpose such as a CD player to listen, a whiteboard to play an interactive game or a camera (Ipad) to take a picture.	<p>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</p> <p style="text-align: center;"><b>Making Music (Cycle B)</b></p> <p>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</p> <p>(Additional e-safety includes privacy rules, talking safely online and cyberbullying)</p>	<p>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</p> <p style="text-align: center;"><b>Photo Editing (Cycle B)</b></p> <p>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</p>	<p>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</p> <p style="text-align: center;"><b>Video Editing (Cycle B)</b></p> <p>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</p>

<b>Data and Information</b>	Using interactive games/software to sort and organise pictures or numbers.	<b>Grouping Data (Cycle A)</b>	<b>Branching Databases (Cycle A)</b>	<b>Flat File Databases (Cycle A)</b>
		<p>To label objects</p> <p>To identify that objects can be counted</p> <p>To describe objects in different ways</p> <p>To count objects with the same properties</p> <p>To compare groups of objects</p> <p>To answer questions about groups of objects</p> <p>To recognise that we can count and compare objects using tally charts</p> <p style="text-align: center;"><b>Pictogram (Cycle B)</b></p> <p>To recognise that objects can be represented as pictures</p> <p>To create a pictogram</p> <p>To select objects by attribute and make comparisons</p> <p>To recognise that people can be described by attributes</p> <p>To explain that we can present information using a computer</p>	<p>To create questions with yes/no answers</p> <p>To identify the object attributes needed to collect relevant data</p> <p>To create a branching database</p> <p>To identify objects using a branching database</p> <p>To explain why it is helpful for a database to be well structured</p> <p>To compare the information shown in a pictogram with a branching database</p> <p style="text-align: center;"><b>Logging Data (Cycle B)</b></p> <p>To explain that data gathered over time can be used to answer questions</p> <p>To use a digital device to collect data automatically</p> <p>To explain that a data logger collects 'data points' from sensors over time</p> <p>To use data collected over a long duration to find information</p> <p>To identify the data needed to answer questions</p> <p>To use collected data to answer questions</p>	<p>To use a form to record information</p> <p>To compare paper and computer-based databases</p> <p>To outline how grouping and then sorting data allows us to answer questions</p> <p>To explain that tools can be used to select specific data</p> <p>To explain that computer programs can be used to compare data visually</p> <p>To apply my knowledge of a database to ask and answer real-world questions</p> <p style="text-align: center;"><b>Spreadsheets (Cycle B)</b></p> <p>To identify questions which can be answered using data</p> <p>To explain that objects can be described using data</p> <p>To explain that formula can be used to produce calculated data</p> <p>To apply formulas to data, including duplicating</p> <p>To create a spreadsheet to plan an event</p> <p>To choose suitable ways to present data</p>

Programming A	<p>Ordering simple instructions. Beginning to move Beebots by inserting instructions.</p> <p>Using key words such as forwards, backwards, turn, stop and start.</p>	<p><b>Moving a Robot (Cycle A)</b></p> <p>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</p> <p><b>Introduction to Animation (Cycle B)</b></p> <p>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</p>	<p><b>Repetition in Shapes (Cycle A)</b></p> <p>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</p> <p><b>Sequence in Music (Cycle B)</b></p> <p>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</p>	<p><b>Selection in Physical Computing (Cycle A)</b></p> <p>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</p> <p><b>Variables in Games (Cycle B)</b></p> <p>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</p>

<b>Programming B</b>	<p>Combining tech with activities within continuous provision.</p>	<b>Robot Algorithms (Cycle A)</b>	<b>Repetition in Games (Cycle A)</b>	<b>Selection in Quizzes Cycle A)</b>
		<p>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</p> <p style="text-align: center;"><b>Introduction to Quizzes (Cycle B)</b></p> <p>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</p>	<p>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</p> <p style="text-align: center;"><b>Events &amp; Actions (Cycle B)</b></p> <p>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</p>	<p>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</p> <p style="text-align: center;"><b>Sensing (Cycle B)</b></p> <p>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</p>

