Computing Curriculum



Intent

Computing at St Werburgh's Catholic Primary School intends to develop 'thinkers of the future' through a modern, ambitious and relevant education in computing. We want to equip pupils to use computational thinking and creativity that will enable them to become active participants in the digital world. It is important to us that the children understand how to use the ever-changing technology to express themselves, as tools for learning and as a means to drive their generation forward into the future.

Whilst ensuring they understand the advantages and disadvantages associated with online experiences, we want children to develop as respectful, responsible and confident users of technology, aware of measures that can be taken to keep themselves and others safe online. Our aim is to provide a computing curriculum that is designed to balance acquiring a broad and deep knowledge alongside opportunities to apply skills in various digital contexts. Beyond teaching computing discreetly, we will give pupils the opportunity to apply and develop what they have learnt across wider learning in the curriculum.

Implementation

Our scheme of work for Computing is adapted from the 'Teach Computing' Curriculum and covers all aspects of the National Curriculum. This scheme was chosen as it has been created by subject experts and based on the latest pedagogical research. It provides an innovative progression framework where computing content (concepts, knowledge, skills and objectives) has been organised into interconnected networks called learning graphs.

The curriculum aims to equip young people with the knowledge, skills and understanding they need to thrive in the digital world of today and the future. The curriculum can be broken down into 3 strands: computer science, information technology and digital literacy, with the aims of the curriculum reflecting this distinction.

A key part of implementing our computing curriculum was to ensure that safety of our pupils is paramount. We take online safety very seriously and we aim to give children the necessary skills to keep themselves safe online. We teach this through the National Online Safety. Children have

a right to enjoy childhood online, to access safe online spaces and to benefit from all the opportunities that a connected world can bring them, appropriate to their age and stage.

Impact

Our Computing curriculum will ensure all of our pupils, regardless of different backgrounds and starting points, have the same opportunities to explore and enquire about the different areas of computing including online safety. Knowledge, understanding and skills will be secured and embedded so that all pupils achieve their full potential.

In order to demonstrate that we have accomplished our aims, pupils at St Werburgh's Catholic Primary School should:

- Be enthusiastic and confident in their approach towards Computing.
- Present as competent and adaptable 'Computational Thinkers' who are able to use identified concepts and approaches in all areas of their learning.
- Be able to identify the source of problems and work with perseverance to 'debug' them.
- Create and evaluate their own project work.
- Have a secure understanding of the positive applications and specific risks associated with a broad range of digital technology.

Long Term Computing Curriculum Map

	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum 2
Pre-School	Children will be exposed to different types of technology within the classroom as well as cause and effect toys.	Children will use all of their senses to explore these types of toys and resourcesexploring light and dark using torches. Exploring battery operated Christmas decorations.	Adults will support children in anticipating repeated sounds, sights and actions, e.g. when an adult demonstrates an action toy several times.	Children will start to show interest in toys with buttons, flaps and simple mechanisms and begins to learn to operate them independently.	Children will have access to role play equipment that represent the technology they might see at home (phones, computers, remotes in the home corner).	Children will start to use different types of technology with the support of an adult for example taking pictures using the Ipads, using the interactive board, using a digital camera, creating digital art.
	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum 2
Foundation 1	Children will know how to use a camera to take photos and scan QR Codes.	Children will know how to use the Interactive white board.	Children will know how to select an app on an iPad.	Children will know how to make digital art on the iPad/IWB.	Children will know how to play interactive games on the iPad/IWB.	Children will become familiar with Beebots and Codapillars.
	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum 2
Foundation 2	Children will know how to use an iPad to take photos and scan QR codes.	Children will know how to use an ipad to make digital art using the programme 'doodle'	Children will know how to type their name on an on- screen keyboard.	Children will know how to open and complete a simple programme on the iPad.	Children will know how to ask google a question using dictation.	Children will know how to programme a beebot codapillar to navigate a map.
E-Safety for Foundation Stage	Self-image & Identity	Online Relationships	Online Reputation	Online Bullying	Privacy & Security Managing Online Information	Health, Wellbeing & Lifestyle
	I can name and recognise uncomfortable, embarrassed, and upset emotions I can recognise, online or offline, that anyone can say 'no thank you'/ 'please stop'/ 'I'll tell'/'I'll ask' to somebody who makes them feel sad, uncomfortable, embarrassed or upset	I can recognise some ways in which the internet can be used to communicate. I can give examples of how I (might) use technology with people I know.	I can identify ways that I can put information on the internet.	I can describe ways that some people can be unkind online I can offer examples of how this can make others feel.	I can talk about how to use the internet as a way of finding information online. I can identify devices I could use to access information on the internet I can identify some simple examples of my personal information	I can identify rules that help keep us safe and healthy in and beyond the home when I am using technology. I can give some simple examples of these rules I can apply these rules during my play I can link feelings to my online experiences

	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum 2
Year 1	Computing systems- Technology around us	Creating Media – Digital Painting	Programming A- Moving a robot	Data and Information – Grouping data	Creating Media – Digital Writing	Programming B – Programming animations
Key knowledge	-To identify technology -To identify a computer and its main parts -To use a mouse in different ways -To use a keyboard to type on a computer -To use the keyboard to edit text -To create rules for using technology responsibly	-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	-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 -To plan a simple program -To find more than one solution to a problem	-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 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 typing on a computer to writing on paper	 -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
E-Safety	Self-image & Identity	Online Relationships	Online Reputation	Online Bullying	Managing Online Information Health, Wellbeing & Lifestyle	Privacy & Security
	Feeling sad, uncomfortable, embarrassed or upset Mapping our mood My trusted adults	Asking permission Communicating with technology Being kind and considerate	Sharing information What not to share Getting help	Ways people can be unkind online How being unkind can make people feel Kind behaviour online	Devices and the internet Finding information Real or make-believe? Being healthy with technology Technology rules Following the rules	My private information Can I share my information? Passwords

	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum 2
Year 2	Computing systems and networks – IT around us	Creating media – Digital photography	Programming A – Robot algorithms	Data and information – Pictograms	Creating media - Digital music	Programming B - Programming quizzes
Key knowledge	 To recognise the uses and features of information technology To identify the uses of information technology in the school To identify information technology beyond school To explain how information technology helps us To explain how to use information technology safely To recognise that choices are made when using information technology 	-To use a digital device to take a photograph -To make choices when taking 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 photos can be changed	-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 -To explain that programming projects can have code and artwork -To design an algorithm -To create and debug a program that I have written	 To recognise that we can count and compare objects using tally charts 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 	-To say how music can make us feel -To identify that there are patterns in music -To experiment with sound using a computer -To use a computer to create a musical pattern -To create music for a purpose -To review and refine our computer work	-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
E-Safety	Self-image & Identity	Online Relationships	Online Reputation	Online Bullying	Managing Online Information Health, Wellbeing & Lifestyle	Privacy & Security
	What I want to look like online Risky situations online Giving advice	How to ask permission Consent Consent and sharing online	My school My profile Speaking to trusted adults	What is bullying? How bullying makes someone feel Getting support	The main parts of a webpage Voice-activated searching True or not? Using technology Following our technology rules Family rules	Keeping things private Stronger passwords The internet at home

	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum 2
Year 3	Computing systems and networks – Connecting computers	Creating media - Stop-frame animation	Programming A - Sequencing sounds	Data and information – Branching databases	Creating media – Desktop publishing	Programming B - Events and actions in programs
Key knowledge	-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 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	-To explore a new programming environment -To identify that commands have an outcome -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 create questions with yes/no answers -To identify the attributes needed to collect data about an object -To create a branching database -To explain why it is helpful for a database to be well structured -To plan the structure of a branching database -To independently create an identification tool	 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 	 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
E-Safety	Self-image & Identity	Online Relationships	Online Reputation	Online Bullying	Managing Online Information Health, Wellbeing & Lifestyle	Privacy & Security
	Avatars Usernames online Changing identity online	Sharing information online Hurtful situations online Permission and sharing	Researching online Things I don't want to share online Being unsure and seeking help	Appropriate behaviour online Bullying online Getting support	Appropriate behaviour online Bullying online Getting support Activities in my day Spending time and positive activities Age ratings	Keeping passwords private Reporting and blocking Collecting data

	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum 2
Year 4	Computing systems and networks – The Internet	Creating media - Audio production	Programming A – Repetition in shapes	Data and information – Data logging	Creating media – Photo editing	Programming B – Repetition in games
Key knowledge	-To describe how networks physically connect to other networks -To recognise how networked devices make up the internet -To outline how websites can be shared via the World Wide Web (WWW) -To describe how content can be added and accessed on the World Wide Web (WWW) -To recognise how the content of the WWW is created by people -To evaluate the consequences of unreliable content	-To identify that sound can be recorded -To explain that audio recordings can be edited -To recognise the different parts of creating a podcast project -To apply audio editing skills independently -To combine audio to enhance my podcast project -To evaluate the effective use of audio	-To identify that accuracy in programming is important -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 task into small steps -To create a program that uses count-controlled loops to produce a given outcome	 -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 recognise how a computer can help us analyse data -To identify the data needed to answer questions " -To use data from sensors to answer questions 	-To explain that the composition of digital images can be changed -To explain that colours can be changed in digital images -To explain how cloning can be used in photo editing -To explain that images can be combined -To combine images for a purpose -To evaluate how changes can improve an image	-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 that 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
E-Safety	Self-image & Identity	Online Relationships	Online Reputation	Online Bullying	Managing Online Information Health, Wellbeing & Lifestyle	Privacy & Security
	My online and offline identities Positive interactions Identity theft	Online friends Healthy online behaviour Respect and privacy	Tips for searching online Finding reliable information online Researching a celebrity	Being kind online Recognising when someone is hurt, angry or upset Positive and negative comments	Adverts online Searching for reliable information Adverts and pop-ups Being healthy online Taking care of your mind Our free time	Making choices Data saved online Consent online

	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum 2
Year 5	Computing systems and networks - Systems and searching	Creating media - Video production	Programming A – Selection in physical computing	Data and information – Flat- file databases	Creating media – Introduction to vector graphics	Programming B – Selection in quizzes
Key knowledge	 -To explain that computers can be connected together to form systems -To recognise the role of computer systems in our lives -To experiment with search engines -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 explain what makes a video effective -To identify digital devices that can record video -To capture video using a range of techniques -To create a storyboard -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 	 -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 -To explain 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 program that controls a physical computing project 	 -To use a form to record information -To compare paper and computer-based databases -To outline how you can answer questions by grouping and then sorting data -To explain that tools can be used to select specific data -To explain that computer programs can be used to compare data visually -To use a real-world database to answer questions 	 -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 apply what I have learned about vector drawings 	 -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
E-Safety	Self-image & Identity	Online Relationships	Online Reputation	Online Bullying	Managing Online Information Health, Wellbeing & Lifestyle	Privacy & Security
	Copy, modify, alter Creating a digital avatar Photos online	Strangers online Emojis Our communities	The perfect profile Researching online Making judgements	Online and offline bullying Telling jokes Helpline services	Trustworthy content Targeted adverts Assessing online information The pros and cons of being online Looking after our mental health Spending money in games	Developing passwords Our data online App permissions

	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum 2
Year 6	Computing systems and networks - Communication and collaboration	Creating media – Web page creation	Programming A – Variables in games	Data and information – Spreadsheets	Creating media – 3D Modelling	Programming B - Sensing movement
Key knowledge	-To explain the importance of internet addresses -To recognise how data is transferred across the internet -To explain how sharing information online can help people to work together -To evaluate different ways of working together online -To recognise how we communicate using technology -To evaluate different methods of online communication	 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 	-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	 -To create a data set in a spreadsheet -To build a data set in a spreadsheet -To explain that formulas can be used to produce calculated data -To apply formulas to data -To create a spreadsheet to plan an event -To choose suitable ways to present data 	-To recognise that you can work in three dimensions on a computer -To identify that digital 3D objects can be modified -To recognise that objects can be combined in a 3D model -To create a 3D model for a given purpose -To plan my own 3D model -To create my own digital 3D model	 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 a 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
E-Safety	Self-image & Identity	Online Relationships	Online Reputation	Online Bullying	Managing Online Information Health, Wellbeing & Lifestyle	Privacy & Security
	Challenging stereotypes Managing online situations Giving online safety advice	Sharing photos of others To share or not to share? My digital footprint	Protecting my online reputation Creating a positive online presence My profile	Screengrabs and screenshots Reporting online bullying The impact of online bullying	Persuasion and adverts Fake news detective Writing fake news Being healthy with technology Persuasive design online Pressure and technology	Managing passwords Real or fake? Phishing