Community Friendship Perseverance Ambition Respect Trust

St Nicholas provides a welcoming, inclusive and aspirational learning environment at the heart of its community. We nurture, encourage and support all children, adults and their families to be the best as God intended. Following God's example of love and trust, we develop resilience and creativity in all we do.

Learning, loving and encouraging through Christ

Computing Long Term Plan 2023-24

The units of learning in computing are based on the Kapow scheme of work. It is a progressive and fully planned scheme, giving children relevant learning experiences to help navigate their world. The teaching units cover the national curriculum areas of computer science, information technology and digital literacy. Assessments are taken from ongoing observations of the children. Computing is not only taught in set lessons, but opportunities also arise in other areas of the curriculum to use computers to present work in a variety of different ways.

We have categorised our units into five key areas, which we return to across the year groups making it clear to see prior and future learning for the children and how what they are taught fits into their wider learning journey:

- Computing systems and networks
- Programming
- Creating media
- Data handling
- Online safety (Additional elements of online safety are also taught through our RSE/PSHE curriculum).

There are also four Skills Showcase units across KS1/KS2. These units give children the chance to combine and apply skills and knowledge gained from a range of the five key areas above to produce a specific outcome.

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Early Years

Whilst the technology strand is no longer a specific area in the EYFS framework (2021), our youngest children have the opportunity to develop computing skills, building interest and confidence using technology and preparing them for KS1.

Early Learning Goals	Learning opportunities (computing area covered)
Communication and language	Learning how to explore and tinker with hardware to develop familiarity using relevant computing vocabulary *(Computer Science)* Learning to log in and log out *(Digital Literacy)*
Personal, social and emotional development	Learning how to operate a camera to take photographs of meaningful creations or moments *(Computer Science)*
Physical development	Following instructions as part of practical activities and games *(Computer Science)* Developing basic mouse skills such as moving and clicking *(Computer Science)* Exploring branch databases (yes / no charts) through physical games *(Information Technology)*
Literacy	Learning to give simple instructions *(Computer Science)* Recognising and identifying familiar letters and numbers on a keyboard *(Computer Science)* Using relevant computing vocabulary *(Computer Science)*
Mathematics	Recognising and identifying familiar letters and numbers on a keyboard *(Computer Science)* Experimenting with programming a Bee-bot and learning how to give simple commands *(Computer Science)* Representing data through pictograms or sorting and categorising objects (using technology or unplugged activities) *(Information Technology*
Understanding the world	Learning how to explore and tinker with hardware to develop familiarity *(Computer Science)* Experimenting with programming a Bee-bot and learning how to give simple commands *(Computer Science)* Recognising that a range of technology is used in places such as homes and schools *(Digital Literacy)*
Expressive arts and design	Using simple programs, e.g. Microsoft Paint, to create digital art *(Information Technology)*

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KS1 and KS2

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 1	Computing systems and networks: Improving mouse skills *The children learn how to login and navigate around a computer, develop mouse skills, learning how to drag, drop, click and control a cursor to create works of art inspired by Kandinsky and self-portraits.*	Programming 1: Algorithms unplugged *Algorithms, decomposition and debugging are related to familiar contexts, without using computers, such as dressing up, making a sandwich, learning why instructions need to be specific.*	Skills showcase: Rocket to the moon *Developing keyboard and mouse skills through designing, building and testing individual rockets by creating a digital list of materials, using drawing software and recording data.*	Programming 2: Bee-Bots *Developing early programming skills using Bee-Bots.*	Creating media: Digital imagery *We use creativity and imagination to plan a mini-adventure story and capture it using photography skills: enhancing photos using a range of editing tools and searching for and adding images to a project, resulting in a photo collage showcase.*	Data handling: Introduction to data *Learn what data is and the different ways that it can be represented; developing an understanding of why data is useful, how it can be used and ways in which it can be gathered and recorded both by humans and computers.*
Year 2	Computing systems and networks 1: What is a computer? *Children think of computers as a screen, a keyboard and perhaps a mouse. We explore exactly what a computer is by identifying inputs and outputs, how computers are used and by designing our own computerised invention.*	Programming 1: Algorithms and debugging *Here we combine unplugged and plugged-in activities to develop an understanding of; what algorithms are, how to program them and how they can be made more efficient, by introducing loops.*	Computing systems and networks 2: Word processing *We learn about word processing and how to stay safe online as well as developing typing skills. We introduce keyboard shortcuts, as well as simple editing tools including bold, italics, underline, font colour as well as how to import images.*	Programming 2: Scratch Jr *We explore how blocks work using Scratch Jr, carrying out cycles of predict > test > review. We program a story, an animal animation, and we make musical instruments.*	Creating media: Animation *Storyboarding and simple animation creation.*	Data handling: (ISS) International Space Station *The ISS is a fascinating real-world setting for teaching how data is collected, used and displayed as well as the scientific learning of the conditions needed for plants and animals, including humans, to survive.*

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Year 3	Computing systems and networks 1: Networks *We introduce the concept of networks, learning how devices communicate with each other. We identify components, learning how information is shared and exploring examples of real-world networks.*	Programming: Scratch *We build on the children's year 2 experiences with Scratch Jr and, using Scratch, we learn to use repetition or 'loops' and build upon skills to program an animation, a story and a game.*	Computing systems and networks 2: Emailing *We learn how to send emails with attachments and how to be a responsible digital citizen by thinking about the contents of what is sent.*	Computing systems and networks 3: Journey inside a computer *We become computer parts to help our understanding of how a computer works, as well as identifying similarities and differences between various models.*	Creating media: Video trailers *Developing filming and editing video skills through the storyboarding and creation of book trailers.*	Data handling: Comparison cards databases *Using the theme of a 'Comparison cards game' (based on Top Trumps), we learn what a database is by understanding the meanings of records, fields and data. Further exploration will lead to the development of the ideas of sorting and filtering.*
Year 4	Computing systems and networks: Collaborative learning *Working collaboratively in a responsible and considerate way as well as looking at a range of collaborative tools.*	Programming 1: Further coding with Scratch *In this unit, we look at what a variable is and how to use them in coding.*	Creating media: Website design *We develop our research, word processing, and collaborative working skills whilst learning how web pages and web sites are created, exploring how to change layouts, embed images and videos and link between pages.*	Skills showcase: HTML *We learn how to edit the HTML and CSS of a web page so we can change the layout of a website, the text and images.*	Programming 2: Computational thinking *Here we combine unplugged and plugged-in activities to develop the four areas of computational thinking – Decomposition, Abstraction, Pattern Recognition, and Algorithm design.*	Data handling: Investigating weather *In this unit, we research and store data using spreadsheets; design a weather station that gathers and records data; learn how weather forecasts are made and use green screen technology to present a weather forecast.*

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Year 5	Computing systems and networks: Search engines *We use keywords and phrases, identify inaccurate information, and learn how page ranking works.*	Programming 1: Music *In this unit, we apply programming skills to create sounds and melodies leading to a battle of the bands performance.*	Data handling: Mars Rover 1 *We will be learning about data transfer and binary code.*	Programming 2: BBC Micro: bit *In this exciting unit, we will get hands-on using the BBC micro: bit to learn about the meaning and purpose of programming.*	Creating media: Stop-motion animation *Here, we develop ideas by storyboarding, take photographs and edit them together to create a video animation.*	Skills showcase: Mars Rover 2 *The children explore how the Mars rover moves, follows instructions, collects and sends data. We deepen our understanding of how computers work, what data is and how it is transferred as well as developing their 3D design skills.*
Year 6	Programming: Introduction to Python *In this unit, we build on our programming knowledge by using Python, a language used in business and industry. We create designs and art. We also build nested loops to make our code more efficient.*	Data handling 1: Big Data 1 *'Big Data' describes the ways organisations use data in their work. We identify how barcodes and QR codes work; learn how infrared waves transmit data and recognise the uses of RFID.*	Computing systems and networks: Bletchley Park *We will be looking at the marvel that is Bletchley Park and applying code breaking and password hacking skills.*	Creating media: History of computers *In this unit, we write, record and edit radio plays set during WWII, look back in time at how computers have evolved and design a computer of the future.*	Data handling 2: Big Data 2 *We build upon our knowledge of how networks and the Internet share information. We learn how big data is used to design smart buildings to improve efficiency, and we design our own smart schools.*	Skills showcase: Inventing a product *In this unit, we design a product, evaluating, adapting and debugging code to make it suitable and efficient; we use software to design products; create our own websites and record adverts to promote our inventions.*

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Online Safety

Online safety is taught termly across the year in each year group – usually one lesson per term. Below is a summary of the learning in each year group.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Termly Online safety lessons	*Learning about online safety, including useful tips to stay safe when online; how to manage feelings and emotions when someone or something has upset us online; learning about the responsibility we have as online users; exploring the idea of a 'digital footprint'.*	*Learning about online safety, including what happens to information posted online; how to keep things private online; who we should ask before sharing online; and describing different ways to ask for, give, or deny permission online.*	*Learning about online safety: 'fake news', privacy settings, ways to deal with upsetting online content, protecting our personal information on social media.*	*Learning how to navigate the internet in an informed, safe and respectful way.*	*Learning how to alter application permissions; considering the positive and negative aspects of online communication; recognising that online information is not always factual; learning how to deal with online bullying and the effect technology has on our wellbeing.*	*Learning to deal with issues online that produce negative feelings and exploring ways to overcome this; learning about the impact and consequences of sharing information online; exploring how to develop a positive online reputation; combating and dealing with online bullying.*