



Computing Curriculum

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Computing Intent Statement

Curriculum Design and Intent

At ST Vincent's VC Academy, we believe that Computing is an integral part of preparing children to live in a world where technology is continuously and rapidly evolving, so much so that children are being prepared to work with technology that does not even exist yet. For this reason, we feel that it is important that children can participate in the creation of these new tools to fully grasp the relevance of and the possibilities of emerging technologies thus preparing them for the world of work.

The Computing in the National Curriculum expectations split the teaching and learning of Computing into three strands (Computer Science, Digital Literacy and Information Technology). It is therefore important that children recognise the difference between what makes each one relevant to their future, as well as their everyday lives. High quality teaching of Computing, from Reception through to Year 6, utilises a combination of practical lessons and theory lessons designed to promote discussion and nurture understanding, which are also relevant to other areas of the curriculum such as PSHE and Citizenship.

National Curriculum: Aims and Purpose

Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial system. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Aims:

Computer Science

- To enable children to become confident coders on a range of devices.
- To create opportunities for collaborative and independent learning.
- To develop children's understanding of technology and how it is constantly evolving.

Digital Literacy

- To enable a safe computing environment through appropriate computing behaviours.
- To allow children to explore a range of digital devices.
- To promote pupils' spiritual, moral, social and cultural development.

Information Technology

- To develop ICT as a cross-curricular tool for learning and progression.
- To promote learning through the development of thinking skills.
- To enable children to understand and appreciate their place in the modern world.

Links to learning in EYFS:

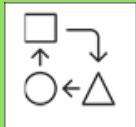
Within EYFS, children will be exposed to Computational Thinking. 'Computational Thinking' is a set of problem-solving skills that we can use in everyday life. These pre-requisite skills, alongside planned experiences, ensure children are ready to access the Computing Curriculum.

[Computational Thinking](#)



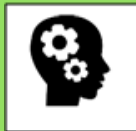
Big Ideas

- To provide a relevant, challenging and enjoyable curriculum for computing for all pupils.
- To equip pupils with the confidence and capability to use ICT and computing throughout their later life.
 - To enhance learning in other areas of the curriculum using ICT and computing.
 - To develop understanding of staying safe online.
 - To give access and exposure to a wide range of technology.



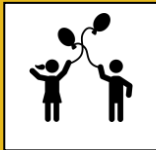
Content, Sequencing and Retrieval

- NCCE Teach Computing Curriculum ensures a progressive approach to computing
- Support pupils in the acquisition of knowledge, through the use of key concepts, terms, and vocabulary, providing opportunities to build a shared and consistent understanding
 - Subject specific vocabulary is selected and taught within lesson sequences.
- Opportunities to revisit and retrieve prior learning are woven into sequencing and teaching and learning practice.
 - Learning sequences build upon prior knowledge and skills.



Engagement / Enrichment

- Digital Leaders from Y5 and Y6 provide support to pupils and teachers, as well as delivering important online safety messages.
- Extra-Curricular computing clubs to give further opportunities for children to develop their computing skills.
 - Technology used across the curriculum to further enhance engagement in all subjects.



Support, Challenge and Progress for All

Units of work are carefully sequenced, so prior knowledge and concepts are returned to and built upon from previous year groups and units.

Knowledge Mats are used to pre-load learners before lessons to support vocabulary and key concepts.

Our Curriculum follows a tight progression of skills and knowledge.

Children take part in regular mini quizzes and retrieval activities to strengthen their memory

Remembering and building on skills, information and knowledge is celebrated and giving opportunities for this is a key part of St Vincent's teaching and learning opportunities

Every child has access to the National Curriculum.



Computing Long Term Plan

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	Awesome Autumn		Springtime		Summer Fun	
Reception	Winter Warmers		Boats Ahoy!		Busy Bodies	
	Computing systems and networks	Creating media	Programming A	Data and information	Creating media	Programming B
<u>Year 1</u>	Technology around us Recognising technology in school and using it responsibly.	Digital painting Choosing appropriate tools in a program to create art, and making comparisons with working non-digitally	Moving a robot Writing short algorithms and programs for floor robots, and predicting program outcomes.	Grouping data Exploring object labels, then using them to sort and group objects by properties.	Digital writing Using a computer to create and format text, before comparing to writing non-digitally	Programming animations Designing and programming the movement of a character on screen to tell stories
<u>Year 2</u>	Information technology around us Identifying IT and how its responsible use improves our world in school and beyond.	Digital photography Capturing and changing digital photographs for different purposes.	Robot algorithms Creating and debugging programs, and using logical reasoning to make predictions.	Pictograms Collecting data in tally charts and using attributes to organise and present data on a computer.	Making music Using a computer as a tool to explore rhythms and melodies, before creating a musical composition.	Programming quizzes Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz.
<u>Year 3</u>	Connecting computers Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks.	Stop-frame animation Capturing and editing digital still images to produce a stop-frame animation that tells a story	Sequencing sounds Creating sequences in a block-based programming language to make music.	Branching databases Building and using branching databases to group objects using yes/no questions.	Desktop publishing Creating documents by modifying text, images, and page layouts for a specified purpose.	Events and actions in programs Writing algorithms and programs that use a range of events to trigger sequences of actions.
<u>Year 4</u>	The internet Recognising the internet as a network of networks including the WWW, and why	Audio editing Capturing and editing audio to produce a podcast, ensuring that copyright is considered.	Repetition in shapes Using a text-based programming language to explore count-controlled	Data logging Recognising how and why data is collected over time, before using data	Photo editing Manipulating digital images, and reflecting on the impact of changes and whether	Repetition in games Using a block-based programming language to explore count-controlled and

	we should evaluate online content.		loops when drawing shapes	loggers to carry out an investigation.	the required purpose is fulfilled.	infinite loops when creating a game
<u>Year 5</u>	Sharing information Identifying and exploring how information is shared between digital systems.	Video editing Planning, capturing, and editing video to produce a short film.	Selection in physical computing Exploring conditions and selection using a programmable microcontroller.	Flat-file databases Using a database to order data and create charts to answer questions.	Vector drawing Creating images in a drawing program by using layers and groups of objects.	Selection in quizzes Exploring selection in programming to design and code an interactive quiz.
<u>Year 6</u>	Internet communication Recognising how the WWW can be used to communicate and be searched to find information.	Webpage creation Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation	Variables in games Exploring variables when designing and coding a game.	Introduction to spreadsheets Answering questions by using spreadsheets to organise and calculate data	3D modelling Planning, developing, and evaluating 3D computer models of physical objects.	Sensing Designing and coding a project that captures inputs from a physical device.

Knowledge progression

	3 & 4 Years	Reception	Y1	Y2	Y3	Y4	Y5	Y6
C o m p u t i n g s y s t e m s a n d n e t w o r k s	<p>To explore how things work</p> <p>To use interactive technology to make marks</p> <p>To follow rules for using technology safely</p>	<p>To experience a range of programs on interactive technology</p> <p>To experience a range of technology including Chrometabs and interactive whiteboards</p> <p>To turn technology on and off independently</p> <p>To use technology responsibly</p>	<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 on a computer</p> <p>To use the keyboard to edit text</p> <p>To create rules for using technology responsibly</p>	<p>To recognise the uses and features of information technology</p> <p>To identify the uses of information technology in the school</p> <p>To identify information technology beyond school</p> <p>To explain how information technology helps us</p> <p>To explain how to use information technology safely</p> <p>To recognise that choices are made when using information technology</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>To recognise how networked devices make up the internet</p> <p>To outline how websites can be shared via the World Wide Web (WWW)</p> <p>To describe how content can be added and accessed on the World Wide Web (WWW)</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>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>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>

C r e a t i n g M e d i a	To talk about and identify patterns	To continue, copy and create patterns	To describe what different freehand tools do	To use a digital device to take a photograph	To explain that animation is a sequence of drawings or photographs	To identify that sound can be digitally recorded	To explain what makes a video effective	To review an existing website and consider its structure
	Understand that print has meaning	To return to and build on their previous learning, refining ideas and developing their ability	To use the shape tool and the line tools	To make choices when taking a photograph	To relate animated movement with a sequence of images	To use a digital device to record sound	To identify digital devices that can record video	To plan the features of a web page
	To develop my own ideas and decide which materials to use to express them	to represent them	To make careful choices when painting a digital picture	To describe what makes a good photograph	To plan an animation	To explain that a digital recording is stored as a file	To capture video using a range of techniques	To consider the ownership and use of images (copyright)
			To explain why I chose the tools I used	To decide how photographs can be improved	To identify the need to work consistently and carefully	To explain that audio can be changed through editing	To create a storyboard	To recognise the need to preview pages
			To use a computer on my own to paint a picture	To use tools to change an image	To review and improve an animation	To show that different types of audio can be combined and played together	To identify that video can be improved through reshooting and editing	To outline the need for a navigation path
			To compare painting a picture on a computer and on paper	To recognise that photos can be changed	To evaluate the impact of adding other media to an animation	To evaluate editing choices made	To consider the impact of the choices made when making and sharing a video	To recognise the implications of linking to content owned by other people
			To use a computer to write	To say how music can make us feel	To recognise how text and images convey information	To explain that digital images can be changed	To identify that drawing tools can be used to produce different outcomes	To use a computer to create and manipulate three-dimensional (3D) digital objects
			To add and remove text on a computer	To identify that there are patterns in music	To recognise that text and layout can be edited	To change the composition of an image	To identify that drawing tools can be used to produce different outcomes	To compare working digitally with 2D and 3D graphics
			To identify that the look of text can be	To show how music is made from a series of notes		To describe how images can be changed for different uses	To create a vector drawing	
				To show how music is made				

			<p>changed on a computer</p> <p>To make careful choices when changing text</p> <p>To explain why I used the tools that I chose</p> <p>To compare typing on a computer to writing on paper</p>	<p>from a series of notes</p> <p>To create music for a purpose</p> <p>To review and refine our computer work</p>	<p>To choose appropriate page settings</p> <p>To add content to a desktop publishing publication</p> <p>To consider how different layouts can suit different purposes</p> <p>To consider the benefits of desktop publishing</p>	<p>To make good choices when selecting different tools</p> <p>To recognise that not all images are real</p> <p>To evaluate how changes can improve an image</p>	<p>by combining shapes</p> <p>To use tools to achieve a desired effect</p> <p>To recognise that vector drawings consist of layers</p> <p>To group objects to make them easier to work with</p> <p>To evaluate my vector drawing</p>	<p>To construct a digital 3D model of a physical object</p> <p>To identify that physical objects can be broken down into a collection of 3D shapes</p> <p>To design a digital model by combining 3D objects</p> <p>To develop and improve a digital 3D model</p>
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	<p>To identify objects</p> <p>To find similar items</p>	<p>To recognise labels relating to objects</p> <p>To group similar items</p> <p>To describe properties of a group of objects</p>	<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>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 explain why it is helpful for a database to be well structured</p> <p>To identify objects using a branching database</p> <p>To compare the information shown in a pictogram with a branching database</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>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 formulas 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>
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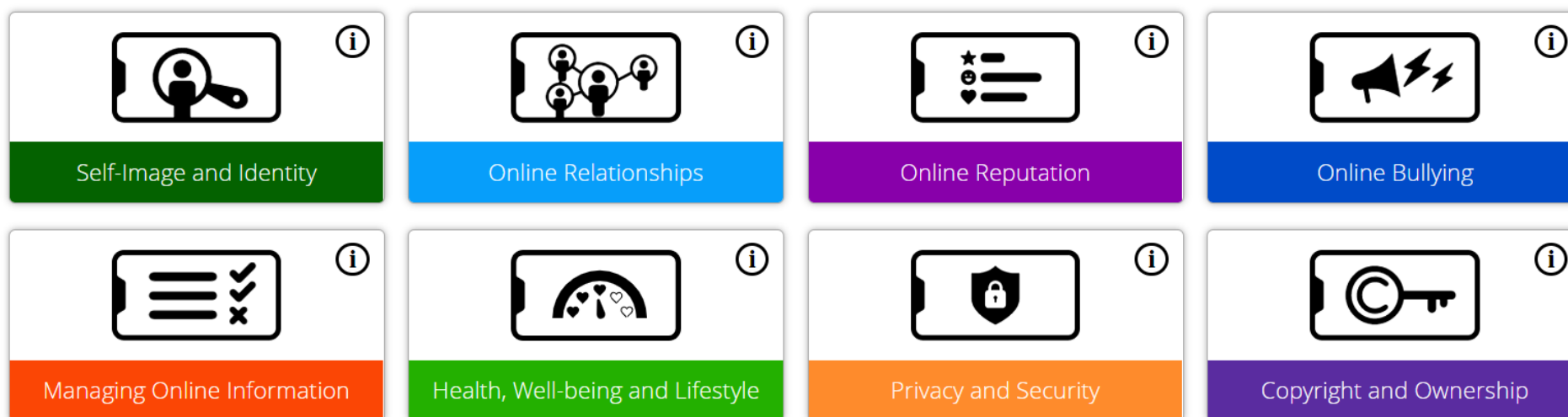
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<p>To follow simple instructions</p> <p>To give simple instructions</p>	<p>To follow a series of instructions</p> <p>To create a series of instructions to be followed</p> <p>To break down a task into smaller parts</p> <p>To explore programmable devices</p>	<p>To explain what a given command will do</p> <p>To act out a given word</p> <p>To combine forwards and backwards commands to make a sequence</p> <p>To combine four direction commands to make sequences</p> <p>To plan a simple program</p> <p>To find more than one solution to a problem</p> <p>To choose a command for a given purpose</p> <p>To show that a series of commands can be joined together</p>	<p>To describe a series of instructions as a sequence</p> <p>To explain what happens when we change the order of instructions</p> <p>To use logical reasoning to predict the outcome of a program (series of commands)</p> <p>To explain that programming projects can have code and artwork</p> <p>To design an algorithm</p> <p>To create and debug a program that I have written</p> <p>To explain that a sequence of commands has a start</p> <p>To explain that a sequence of commands has an outcome</p>	<p>To explore a new programming environment</p> <p>To identify that commands have an outcome</p> <p>To explain that a program has a start</p> <p>To recognise that a sequence of commands can have an order</p> <p>To change the appearance of my project</p> <p>To create a project from a task description</p> <p>To explain how a sprite moves in an existing project</p> <p>To create a program to move a sprite in four directions</p> <p>To adapt a program to a new context</p>	<p>To identify that accuracy in programming is important</p> <p>To create a program in a text-based language</p> <p>To explain what 'repeat' means</p> <p>To modify a count-controlled loop to produce a given outcome</p> <p>To decompose a task into small steps</p> <p>To create a program that uses count-controlled loops to produce a given outcome</p> <p>To develop the use of count-controlled loops in a different programming environment</p> <p>To explain that in programming there are infinite</p>	<p>To control a simple circuit connected to a computer</p> <p>To write a program that includes count-controlled loops</p> <p>To explain that a loop c</p> <p>an stop when a condition is met</p> <p>To explain that a loop can be used to repeatedly check whether a condition has been met</p> <p>To design a physical project that includes selection</p> <p>To create a program that controls a physical computing project</p> <p>To explain how selection is used in</p>	<p>To define a 'variable' as something that is changeable</p> <p>To explain why a variable is used in a program</p> <p>To choose how to improve a game by using variables</p> <p>To design a project that builds on a given example</p> <p>To use my design to create a project</p> <p>To evaluate my project</p> <p>To create a program to run on a controllable device</p> <p>To explain that selection can control the flow of a program</p> <p>To update a variable with a user input</p> <p>To use an conditional statement to</p>
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			<p>To identify the effect of changing a value</p> <p>To explain that each sprite has its own instructions</p> <p>To design the parts of a project</p> <p>To use my algorithm to create a program</p>	<p>To create a program using a given design</p> <p>To change a given design</p> <p>To create a program using my own design</p> <p>To decide how my project can be improved</p>	<p>To develop my program by adding features</p> <p>To identify and fix bugs in a program</p> <p>To design and create a maze-based challenge</p>	<p>loops and count controlled loops</p> <p>To develop a design that includes two or more loops which run at the same time</p> <p>To modify an infinite loop in a given program</p> <p>To design a project that includes repetition</p> <p>To create a project that includes repetition</p>	<p>computer programs</p> <p>To relate that a conditional statement connects a condition to an outcome</p> <p>To explain how selection directs the flow of a program</p> <p>To design a program which uses selection</p> <p>To create a program which uses selection</p> <p>To evaluate my program</p>	<p>compare a variable to a value</p> <p>To design a project that uses inputs and outputs on a controllable device</p> <p>To develop a program to use inputs and outputs on a controllable device</p>
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Project Evolve

To ensure that our pupils have a secure understanding of how to use technology in an appropriate way and continue to keep themselves safe we map into our computing curriculum the 8 Strands of Digital Literacy in an age appropriate progressive way.



Self-Image and Identity - Shaping online identities and how media impacts on gender and stereotypes.

Online Relationships - Relationships and behaviours that may lead to harm and how positive online interaction can empower and amplify voice.

Online Reputation - Strategies to manage personal digital content effectively and capitalise on technology's capacity to create effective positive profiles.

Online Bullying - Strategies for effective reporting and intervention and how bullying and other aggressive behaviour relates to legislation.

Managing Online Information - Strategies for effective searching, critical evaluation and ethical publishing.

Health, Well-being and Lifestyle - The impact that technology has on health, well-being and lifestyle including understanding negative behaviours and issues amplified and sustained by online technologies and the strategies for dealing with them.

Privacy and Security – Behavioural and technical strategies to limit impact on privacy and protect data and systems against compromise.

Copyright and Ownership - Protecting personal content and crediting the rights of others as well as addressing potential consequences of illegal access, download and distribution