

Computing Curriculum



Joyful & Equipped to Succeed & Serve

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Computing Curriculum Statement

Intent

In our rural & isolated setting, children may not encounter the latest technology regularly, however they are still growing up in an online, digital world. A high proportion of our children are from families with a strong heritage of agriculture and manual trades, where digital literacy skills are likely to be increasingly important in the future. We want to equip them with a sound basis to learn the increasingly crucial programming & computing skills to succeed in whichever field they choose to work in later in life.

We also want to prepare our children to safely and confidently navigate the internet now, so that they can experience all of the opportunities the wider world has to offer.

Implementation

We use the following approaches in our teaching of Computing:

- Cross-curricular opportunities to develop computing skills wherever possible, especially in the areas of multimedia & communication, which overlap strongly with Literacy; and handling data, which overlaps strongly with Maths.

- Strong links with PSHE in teaching E-Safety and internet skills, to explore together what it means to be safe and responsible online.

- An accumulative approach to acquiring skills and knowledge, where children build on their previous learning with each new block of learning.

We use practical and simple resources such as bee-bots in KS1 to introduce the key concepts of computing, progressing onto simple block-based coding environments such as *Scratch Junior*, which is open-ended enough to allow more able children to explore increasingly challenging projects which cement understanding of key concepts.

In KS2 we will teach IT skills in a cross-curricular way alongside other core and foundation subjects. We will use *Scratch* to build increasing complex programs which use key concepts such as sequencing, iteration, conditional statements and variables. For the most able children these concepts will be used to create multi-level games or programs which require highly-developed skills with multiple variables and loops. More able children will also have the opportunity to encounter real world programming problems such as creating a web page using HTML, or building simple maths games in Python.

Impact

The impact of our Computing Curriculum will be assessed against the skills progression, but will be evidenced by:

- Pupils being able to explain computing and programming concepts as well as applying them in practice.

- Pupils being confident to select and use appropriate IT resources to present information, create media and solve problems across all subjects in the curriculum.

- Pupils using the internet in a safe and responsible way, seeking help and support when they encounter dangers or difficulty.

EYFS

Although Technology is no longer an ELG in the revised EYFS framework, children will continue to be given chances to use technology as part of their provision as they learn and develop. As part of a mixed-age class they will have opportunities to join in with the practical computing activities on offer for KS1 children.

SEND

IT and Computing skills are just as important, if not more important, for children with additional learning needs, because technology may well play a role in helping them to overcome their educational barriers. We will ensure pupils have access to resources that allow them to succeed in IT, for example by using simpler versions of resources, such as *Scratch Junior* instead of *Scratch*, or by providing adult support and/or step-by-step visual guides to implementing projects.

Computing Curriculum Skills Progression			Dent Church of England Primary School			
Strands	KS1		LOWER KEY STAGE 2		UPPER KEY STAGE 2	
	Y1	Y2	Y3	Y4	Y5	Y6
Multimedia	<p>Graphics</p> <p>Use ICT to generate ideas for their work. Use various tools such as brushes, pens, rubber, stamps, shapes. Save, retrieve and print work.</p> <p>Text</p> <p>Use spacebar, backspace, delete, arrow keys, return. Start to use two hands when typing. Word process short texts to present.</p> <p>Sound recording</p> <p>Record sound at and away from a computer. Use software to record sounds. Change sounds recorded. Save, retrieve and edit sounds.</p> <p>Video</p> <p>Capture video. Discuss which videos to keep and which to delete. Arrange clips to create a short film. Add a title and credits.</p> <p>Presentation (Powerpoint)</p> <p>Choose a suitable subject and collect some information. Create a mind-map of this data. Link appropriate bubbles. Present the information to a group.</p>		<p>Graphics</p> <p>Acquire, store and combine images from cameras or the internet for a purpose. Use the print screen function to capture an image. Select certain areas of an image and resize, rotate and invert the image. Edit pictures using a range of tools in a graphics program.</p> <p>Video (imovie trailer)</p> <p>Capture video for a purpose. Choose which clips to keep and which to discard. Trim and arrange clips to convey meaning. Add titles, credits, slide transitions, special effects.</p> <p>Text</p> <p>Get quicker at typing with both hands. Use a variety of font sizes, styles and colours. Align text left, right and centre.</p> <p>Presentation (Powerpoint)</p> <p>Create a title slide and choose a style. Change the layout of a slide. Insert a picture/text/graph from the Internet or personal files. Decide upon and use effective transitions.</p>		<p>Video</p> <p>Storyboard and capture videos for a purpose.</p> <p>Plan for the use of special effects and transitions.</p> <p>Trim, arrange and edit audio levels to improve quality of their outcome.</p> <p>Export their video and select an appropriate platform to share or host it.</p> <p>Presentation (Powerpoint)</p> <p>Work independently to create a multi slide presentation that includes speakers notes. Use transitions and animations to improve the quality of the presentation.</p> <p>Include sounds and moving graphics in the slides.</p> <p>Present to a large group or class using the notes made.</p>	
	Online	<p>Internet research</p> <p>Talk about websites they have been on. Explore a website by clicking on the arrows, menus and hyperlinks.</p> <p>Emails</p> <p>Recognise an email address. Find the @ key on the keyboard. Contribute to a class email. Open and select to reply to an email as a class.</p>		<p>Internet research</p> <p>Type in a URL to find a website. Add websites to a favourites list. Use a search engine to find a range of media, e.g. images, texts Think of search terms to use linked with questions they wish to answer. Talk about the reliability of information on the Internet, e.g. the difference between fact and opinion.</p> <p>Understand the difference between the world-wide-web and the internet.</p> <p>Emails</p> <p>Log into an email account, open, create and send an email. Attach files to an email. Download and save files from an email. Email more than one person and reply to all.</p>		<p>Internet Research</p> <p>Use advance search functions in Google (quotations).</p> <p>Understand websites such as Wikipedia are made by users (link to E-Safety). Use strategies to check the reliability of information (cross check with another source such as books).</p> <p>Use their knowledge of domain names to aid their judgment of the validity of websites.</p> <p>Understand that networks other than the internet exist, such as LANs.</p> <p>Cloud Computing</p> <p>Understand files may be saved off their device in 'clouds'. Upload/download a file to the cloud on different devices.</p>

Computing Curriculum Skills Progression			Dent Church of England Primary School			
Strands	KS1		LOWER KEY STAGE 2		UPPER KEY STAGE 2	
	Y1	Y2	Y3	Y4	Y5	Y6
E-Safety	<p>Make decisions about whether or not statements found on the internet are true or not.</p> <p>Identify devices that can be used to search the Internet. Identify what things count as personal information.</p> <p>Identify when inappropriate content is accessed and act appropriately.</p> <p>Recognise that a variety of devices can be used to connect a number of people. Consider other people's feelings on the Internet.</p>		<p>Question the 'validity' of what they see on the internet.</p> <p>Think before sending and comment on consequences of sending/posting.</p> <p>Recognise online behaviours that would be unfair. Recognise social networking sites and social networking features built into other things (such as online games and handheld games consoles)</p> <p>Make judgments in order to stay safe, whilst communicating with others online. Tell an adult if anything worries them online. Identify dangers when presented with scenarios, social networking profiles</p>		<p>Judge what sort of privacy settings might be relevant to reducing different risks.</p> <p>Judge when and when not to answer a question online.</p> <p>Be a good online citizen and friend.</p> <p>Articulate what constitutes good behaviour online.</p> <p>Find 'report' and 'flag' buttons in commonly used sites and name sources of help (childline, cybermentors etc). Discuss scenarios involving online risk. State the source of information found on the Internet.</p>	
Programming	<p>Bee-bots Give commands including straight forwards / backwards / turn one at a time.</p> <p>Explore what happens when a sequence of instructions is given.</p> <p>Give a set of simple instructions to follow out a task. Give a set of instructions to form simple geometric shapes.</p> <p>Improve/change their sequence of commands. (debugging)</p> <p>Scratch Junior Develop & debug a simple animation using instructions in a sequence.</p>		<p>Scratch Navigate the Scratch programming environment.</p> <p>Create a background and a sprite for a game.</p> <p>Add inputs to control their sprite. Use conditional statements within the program to control the sprite (if...then..) .</p> <p>Use loops to control their sprite, including infinite loops (forever) and conditional statements (forever if).</p>		<p>Scratch Use various external inputs and infinite loops to control sprites. Create and edit variables. Use conditional statements.</p> <p>Design their own game including sprites, backgrounds, scoring and/or timers.</p> <p>Use conditional statements, loops, variables and broadcast messages in the game. The game finishes when a player wins or loses and they must know they have won or lost.</p> <p>Evaluate the effectiveness of the game and debug as required.</p> <p>Python Create a simple user-input game involving guessing strings or integers.</p> <p>Use variables, lists and loops to solve a problem.</p> <p>Use abstraction to create a function which can be used to solve a problem in a program.</p>	
Data	<p>Know that images give information. Say what a pictogram is showing them.</p> <p>Put data into a program. Sort objects and pictures into lists or simple tables. Make a simple Y/N tree diagram to sort information.</p>		<p>Choose information to put into a data table.</p> <p>Design a questionnaire to collect information. sort and organize information to use in other ways.</p> <p>Create and search a spreadsheet.</p> <p>Make graphs from the data in a spreadsheet.</p>		<p>Create data collection forms and enter data accurately from these. Know how to check for and spot inaccurate data.</p> <p>Know which formulas to use when I want to change my spreadsheet model.</p> <p>Make graphs from the data on a spreadsheet and interpret the information in the graphs.</p> <p>Sort and filter information. Understand that changing the numerical data effects a calculation.</p>	

Computing Long Term Plan		Dent Church of England Primary School		
	Year 1 & 2	Year 3 & 4	Year 5 & 6	
Autumn Term	E-Safety & Multimedia: Posters & Videos about E-Safety	E-Safety & Multimedia: PowerPoint Presentations & Videos about E-Safety	E-Safety & Multimedia: PowerPoint Presentations & Videos about E-Safety	
	Programming: Bee-bots	Programming: Scratch—Animations	Programming: Scratch—Animations	
Spring Term	Online: Websites and emails	Online: Networks, the WWW, searches & email	Online: Networks, the WWW, searches & email	
	Programming: Bee-bots	Programming: Scratch— Games	Programming: Scratch—Games	
Summer Term	Data: Tables, Pictograms & Graphs	Data: Tables & Graphs in Excel	Data: Formulas, Tables & Graphs in Excel	
	Programming: Scratch Junior	Programming: Scratch—Games	Programming: Creating programs in Python	

Notes: Pupils cover the same areas each year rather than on a rolling plan, so that they can revisit each area of the curriculum and build cumulatively on previous learning of core concepts and skills. Each year pupils face deeper challenges in the same areas of learning to strengthen their grasp of the content and skills.

Although it is only one of five strands, programming is revisited much more frequently than the other strands. This is because it makes up most of the Computing National Curriculum programmes of study, and needs most time to ensure that *‘the core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming.’*