Computing: Progression Mapped by Unit

Raising aspirations

In order for our pupils to 'soar on wings like eagles' (Isiah 40.31) we ensure that our pupils enjoy a broad and balanced curriculum that promotes 'life in all its fullness' (John 10:10), so that they can each reach their potential. As a church school we acknowledge that all of our pupils are significant to God. We therefore value each child's unique personality and aim to develop their character, talents and abilities to the fullest in His name. Our computing curriculum is an intrinsic part of this, unlocking the potential of each child, so that they can flourish.

Computing and the digital sector make a huge contribution to the British economy and offer a wealth of employment possibilities. We believe that it is our duty to ensure pupils have the skills to access these opportunities later in life and have chosen a computing curriculum that provides breadth without compromising on rigour. We teach computing as a discrete subject, but also embed its use in other areas of the curriculum e.g. art & design, so that pupils can apply their learning and explore computing in a variety of contexts. There are many transferable skills that come from learning about computing, such as resilience, creative problem-solving, team-working and increased social connectivity. We feel these skills are essential to our children's overall development and future economic success in the 21st century.

We complement our KS2 curriculum with visits to our partners at the City Learning Centre (CLC), where pupils benefit from expert teaching and up-to-date equipment. Similarly we seek projects & partnerships that involve digital media with local cultural organisations. Recent projects include working with WAC Arts and one of our animations was screened at The National Gallery in 2021.

Reaching Our Potential

The varied nature of the Teach Computing curriculum means that there is something for every pupil to enjoy. Some pupils love programming and enjoy the rigours of computational thinking, whilst others find their potential in creating new digital media.

We use the Teach Computing curriculum, which has been developed by the National Centre for Computing Education (NCCE). This is an ambitious curriculum created by experts using the latest research. It provides opportunities to learn about; computing systems & networks, data & information, programming and the creation of different types of digital media. These components of computing are essential if pupils are to move beyond being mere consumers of software and digital media and become creators themselves.

Classes are taught one computing unit per half-term. The Teach Computing curriculum also has the following advantages:

- It provides clear lesson plans for teachers, so quality should be consistent
- There is progression built in across year groups to ensure that pupils skills are being developed

- The lessons can be used with software/hardware that we already have or is easy to source
- Resources and software from Purplemash can be used to complement the plans and pupils can access these at home
- It provides a good balance between the teaching of computing science, digital literacy and creating different types of media
- It has clear links to other curriculum areas that teachers can exploit, such as mathematics, science and design & technology
- Many of the Teach Computing units also dovetail neatly with our existing Art & Design and Design & Technology curricula providing opportunities for consolidation and practice

Learning new skills in computing is fun, but also challenging. Pupils are taught that errors are a valuable part of the learning process that helps them to identify what works and what doesn't. The feeling of success that pupils experience after solving a problem, that perhaps they would previously have given up on remains with them, and encourages them to be equally resilient in other areas. In fact, understanding computing and computational thinking better equips pupils to tackle mathematical, scientific or engineering based problems.

Learning to live well together

One of our Christian values is Respect and we use this to frame our conversations regarding how to communicate appropriately on the various digital platforms. Using technology safely is also a strong feature in our curriculum. Each year group completes a Computer Systems and Networks unit. This unit has a strong focus on understanding not only what these things are, but also how they have impacted on human behaviour and the way that we receive information and communicate. Pupils are taught to critically evaluate online information and develop their own code of practice for communicating. Our PHSE curriculum also has a strong focus on these areas too, ensuring that we equip our pupils with the knowledge and know-how to protect themselves online and be kind to others. In addition, we hold special assemblies and lessons during Safer Internet Week.

Pupils often work on projects in pairs. Paired work enables pupils to develop the interpersonal skills that are valued by future employers, such as being able to communicate ideas & plans clearly, plus negotiating differences of approach or opinion.

Impact

Formative assessment opportunities are detailed in each lesson plan, including opportunities for children to self-assess against the success criteria. Summative assessment activities are either provided with the lesson plans or recommended. The objectives in our progression map have been loaded into Integris and teachers are expected to assess the children against them either at the end of each unit or end of each term.

Computing Progression Map

Year	Term	Main focus	Unit	Attainment targets	Software notes
1	Autumn 1	**Computing Systems and Networks**	Technology around us	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 a keyboard to edit text To create rules for using technology responsibly	
	Autumn 2	**Creating Media**	Digital painting	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 they chose the painting tools they used To use a computer independently to paint a picture To compare painting a picture on a computer and on paper	*2paint/2paint a picture – Purplemash*
	Spring 1	**Creating Media**	Digital writing	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 they used the writing tools that they chose To compare writing on a computer and writing on paper	*Google docs/MS Word*
	Spring 2	**Data & Information**	Grouping data	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	2calculate – *Purplemash*
	Summer 1	**Programming**	Moving a robot	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	*Beebots*

	Summer 2	**Programming**	Introduction to animation	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 parts of a project To use an algorithm to create a program	*Scratch jnr/2animate – Purplemash*

Year	Term	Main focus	Unit	Attainment targets	Outcomes
2	Autumn 1	**Computing Systems and Networks**	IT around us	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	
	Autumn 2	**Creating Media**	Digital photography	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	*PIXLR X – available on internet*
	Spring 1	**Creating Media**	Making Music	To say how music can make us feel To identify that there are patterns in music To describe how music is made from a series of notes To describe how music can be used in different ways To create music for a purpose To review and refine our computer work	2beat/2BusyBeats Chrome Music Labs
	Spring 2	**Data & Information**	Pictograms	To recognise that we can count and compare objects easily using 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	2graph – *Purplemash*
	Summer 1	**Programming**	Robot Algorithms	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	*Beebot*

				(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	
	Summer 2	**Programming**	An introduction to quizzes	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	*2quiz – Purplemash*

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3	Autumn 1	**Computing Systems and Networks**	Connecting computers	To explain how digital devices function To identify input and output devices To recognise how digital services 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	
	Autumn 2	**Creating Media**	Animation	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	*I Can Animate – on Ipads*
	Spring 1	**Creating Media**	Desktop publishing	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	*Ms Publisher/ 2Publish/2publish + – Purplemash*
	Spring 2	**Data & Information**	Branching databases	To create questions with yes/no answers To identify the object attributes needed to collect relevant data To create a branching database To explain why it is helpful for a database to be well structured To identify objects using a branching database	*2question - Purplemash*

				To compare information shown in a pictogram with a branching database	
	Summer 1	**Programming**	Sequence in music	To explore a new programming environment To identify that each sprite is controlled by the commands chosen To explain that a program has a start To recognise that a sequence of commands can have an order To change the appearance of a project To create a project from a task description	2sequence/2Busybeats Chrome Music Labs
	Summer 2	**Programming**	Events & actions	To explain how a sprite moves in an existing project To create a program to move a sprite in four directions To adapt to a new context To develop a program by adding features To identify and fix bugs in a program To design and create a maze based challenge	*Scratch / 2code - Purplemash*

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4	Autumn 1	**Computing Systems and Networks**	The internet	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 To describe how content can be added and accessed on the World Wide Web To recognise how the content of the World Wide Web is created by people To evaluate the consequences of unreliable content	
	Autumn 2	**Creating Media**	Audio editing	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	*Audacity*
	Spring 1	**Creating Media**	Photo editing	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	*PIXLR X – available on internet*

	Spring 2	**Data & Information**	Data logging	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 use data collected over a long duration to find information To identify the data needed to answer questions To use collected data to answer questions	*Google Science Journal app* *Arduino – on Ipads*
	Summer 1	**Programming**	Repetition in shapes	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 program into parts To create a program that uses count-controlled loops to produce a given outcome	*Logo – on Purplemash*
	Summer 2	**Programming**	Repetition in games	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	*Scratch / 2code – on Purplemash*

Year 5

Year	Term	Main focus	Unit	Attainment targets	Outcomes
5	Autumn 1	**Computing Systems and Networks**	Sharing information	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 To evaluate different ways of working together online	
	Autumn 2	**Creating Media**	Vector drawing	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	*Google drawing*
	Spring 1	**Creating Media**	Video editing	To recognise video as moving pictures which 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	*Imovie – on Ipads*
	Spring 2	**Data & Information**	Flat-file databases	To use a form to record information To compare paper and computer-based databases To apply their knowledge of a database to ask and answer real-world questions To explain that tools can be used to select data to answer questions	2Investigate - Purplemash
	Summer 1	**Programming**	Selection in physical computing	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, e.g. 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 which includes selection To create a controllable system which includes selection	Edison cars/ Microbits/Lego EV3 Usually CLC workshop
	Summer 2	**Programming**	Selection in quizzes	To explain how selection is used in computer programs To relate that 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	*Scratch/2quiz* - Purplemash

Year 6

Year	Term	Main focus	Unit	Attainment targets	Outcomes
	Autumn 1	**Computing Systems and Networks**	Communication	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	
	Autumn 2	**Creating Media**	3d modelling	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	*Tinkercad / 2DIY3D*
	Spring 1	**Creating Media**	Web page creation	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	Google sites
	Spring 2	**Data & Information**	Spreadsheets	To identify questions which can be answered using data To explain that objects can be described using data To explain that formula can be used to produce calculated data To apply formulas to data, including duplicating To create a spreadsheet to plan an event To choose suitable ways to present data	*Excel /google sheets* *2 calculate - Purplemash*

	Summer 1	**Programming**	Variables in games	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 their own design to create a project To evaluate a project that they have made	*Scratch /2code*
	Summer 2	**Programming**	Sensing	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	Microbits/LegoEV3 Usually a CLC workshop