St. James C. of E. PRIMARY SCHOOL

Progression of Skills for Computing

Overview of Computing Skills:

■ Algorithms — Be able to comprehend, design, create, and evaluate algorithms
■ Computer networks — Understand how networks can be used to retrieve and share information, and how they come with associated risks
■ Computer systems — Understand what a computer is, and how its constituent parts function together as a whole
■ Creating media — Select and create a range of media including text, images, sounds, and video
■ Data and information — Understand how data is stored, organised, and used to represent real-world artefacts and scenarios
■ Design and development — Understand the activities involved in planning, creating, and evaluating computing artefacts
■ Effective use of tools — Use software tools to support computing work
■ Impact of technology — Understand how individuals, systems, and society as a whole interact with computer systems
■ Programming — Create software to allow computers to solve problems
■ Safety and security — Understand risks when using technology, and how to protect individuals and systems

Computing Skills in EYFS

Personal, Social and Emotional Development:

Show resilience and perseverance in the face of challenge.
Know and talk about the different factors that support their overall health and wellbeing:- sensible amount of 'screen time'.
Managing self- Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. **(ELG)**

Physical Development:
Develop their small motor skills so that they can use a range of tools competently, safely and confidently.

Expressive Art and Design: Explore, use and refine a variety of artistic effects to express their ideas and feelings
Creating with materials- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. **(ELG)**

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer Science: Programming A	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 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	To explore a new programming environment To identify that each sprite is controlled by the commands that I choose To explain that a program has a start	To identify that accuracy in programming is important To create a program in a text-based language To explain what 'repeat' means	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 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 plan a simple program To find out more than one solution to a problem.	program (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	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 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	To conclude that a loop can be used to repeatedly check whether a condition has been met To design a physical project which includes selections To create a controllable system which includes selection	To design a project that builds on a given example To use my design to create a project To evaluate my project
Computer Science: Programming B	To choose a command for a given purpose To show 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	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 create a program using my own design To decide how my project can be improved	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 (given challenge)	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	To use a form to record information To compare paper and computer-based databases To apply my knowledge of a database to ask and answer real-world questions To explain that tools can be used to select data to answer questions	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
Digital Literacy and Information Technology:	To identify technology	To recognise the uses and features of information technology	To explain how digital devices function	To describe how networks physically connect to other networks	To explain that computers can be connected together to form systems	To identify how to use a search engine

Computer Systems and their Networks	To identify a computer and its main parts To use a mouse in different ways To use a keyboard to type To use the keyboard to edit text To create rules for using technology responsibly	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	To identify input and output 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 recognise how networked devices make up the internet To outline how websites can be shared via the World Wide Web To recognise how the content of the WWW is created by people To evaluate the consequences of unreliable content	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	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
Digital Literacy and Information Technology: Data and Information	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 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	To create questions with yes/no answers 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 To identify the object attributes needed to collect relevant data	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 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 that uses selection To create a program that uses selection To evaluate my program	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

		described by attributes To explain that we can present information using a computer	To compare the information shown in a pictogram with a branching database	To identify the data needed to answer questions To use collected data to answer questions		To choose suitable ways to present data
Digital Literacy and Information Technology: Creating Media	To use a computer to write To add and remove text on a computer To identify that the look of a 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 writing on a computer with writing on paper 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 identify that there are patterns in music To describe how music can be used in different ways To show how music is made from a series of notes To create music for a purpose To review and refine out computer work 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 describe how photographs can be improved To use tools to change an image	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 that animation is a sequence of drawings or photographs To relate animated movement with a sequence of images	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 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 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 To recognise video as moving pictures, which can 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 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 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 use a computer on my own to paint a picture To compare painting a picture on a computer and on paper	To recognise that images can be changed	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 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	To consider the impact of the choices made when making and sharing a video	To outline the need for a navigation path To recognise the implications of linking to content owned by other people