CURRICULUM PROGRESSION STRAND MAP COMPUTING

Subject: Computing

OUR COMMON PURPOSE

All children will reach their full educational potential and look back at their time at Riverview Junior School with absolute admiration irrespective of gender, race, disability or background.

Rationale:
Computing is a valued part of the school's curriculum. It allows children to learn to design, write and debug programs, write algorithms and work with a variety of inputs and outputs. It provides opportunities for children to communicate and collaborate while gaining an understanding for how computer networks and services work, including the internet and World Wide Web. Through these learning opportunities, children are also taught how to use technology safely, respectfully and responsibly. It is important that children leave school knowing and recognising acceptable and unacceptable behaviour online and are able to identify ways to report their concerns.

Aims and objectives

- to meet the requirement of the National Curriculum
- to create a safe learning environment that inspires all members of the school community to experience a range of digital devices and engage with technology
- to enable all children to become autonomous users of computing so they will become active participants in a digital world
- to embed computing across the curriculum enabling all children to reach the highest possible standards of achievement
- for children, parents, staff, governors and the wider community to have relevant and meaningful experiences using computing
- ensure that pupils are aware of the potential dangers associated with the digital world and know how to deal with situations should they arise
- to use digital devices to enrich pupils learning and develop an imaginative and creative curriculum.

Education for a Connected World Framework: Education for a Connected World - GOV.UK (www.gov.uk)
The EfaCW framework highlights what a child should know in terms of current online technology, its influence on behaviour and development, how to get support, and what skills they need to be able to navigate it safely. This curriculum was designed with these in mind. Not all of the objectives in the Education for a Connected World framework are covered in the Teach Computing Curriculum, as some are better suited to PSHE and SMSC development. However, the coverage required for the computing national curriculum is provided.

CURRICULUM PROGRESSION STRAND MAP COMPUTING

Skills and Knowledge Progression					
Area of Study: Networks					
Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
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	To explain how digital devices function To identify input and output devices 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 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 WWW is created by people To evaluate the consequences of unreliable content	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	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	Define 'protocol' and provide examples of non-networking protocols Compare wired to wireless connections and list examples of specific technologies currently used to implement such connections Define 'bandwidth', using the appropriate units for measuring the rate at which data is transmitted, and discuss familiar examples where bandwidth is important Describe key words such as 'protocols', 'packets', and 'addressing' Describe components (servers, browsers, pages, HTTP and HTTPS protocols, etc.) and how they work together
Curriculum goals:	Children will begin to look at computer networks, including devices that make	Children will apply their knowledge of networks to the Internet and the World	Children will gain experience with the benefits of a network by	Children will learn how search engines work and what influences searching	

	up a network's infrastructure, and link this to the school.	Wide Web. They will also look at copyright and e-safety issues.	creating a collaborative project.	through comparing different engines. They will investigate different methods of communication.	
Outcomes for this area are embedded across all the following areas of study including the enrichment activities.					

CURRICULUM PROGRESSION STRAND MAP COMPUTING

Skills and Knowledge Progression					
Area of Study: Creating Media					
Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
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 To say how music can make us feel 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 explain that animation is a sequence of drawings or photographs To relate animated movement with a sequence of images To plan, review and improve an animation To identify the need to work consistently and carefully To evaluate the impact of adding other media to an animation To create a project from a task description To recognise how text and images convey information and how they can be edited To recognise that text and layout can be edited To choose appropriate page settings	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 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 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 consider the impact of the choices made when making and sharing a video 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 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 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	Apply the key features of a word processor to format a document Evaluate formatting techniques to understand why we format documents Demonstrate an understanding of licensing issues involving online content by applying appropriate Creative Commons licences Critique digital content for credibility Apply referencing techniques and understand the concept of plagiarism Apply referencing techniques that credit authors appropriately Design the layout of the content to make it suitable for the audience

To review and refine our computer work	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 recognise that not all images are real To evaluate how changes can improve an image	To group objects to make them easier to work with To evaluate a vector drawing	To identify that physical objects can be broken down into a collection of 3D shapes To design, develop and improve a digital 3D model	
Curriculum goals:	1) Children will use a range of techniques to create a stop-frame animation. 2) Children create their own pieces of work using desktop publishing software	1) Children will use Audacity to record and edit a podcast 2) Children will develop their understanding of the impact that editing images can have.	1) Children will create short videos in groups from conception to completion 2) Children will create their own vector drawings using Google Drawings	1) Children will identify what makes a good web page and use this information to design and evaluate their own website using Google Sites 2) Children will be making accurate 3D models of physical objects	
Outcomes for this area are embedded across all the following areas of study including the enrichment activities.					

Skills and Knowledge Progression

Area of Study: Data and Information

Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
To recognise that we can count and compare objects using tally charts To recognise that objects can be represented as pictures	To create questions with yes/no answers 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 use a form to record information To compare paper and computer-based databases	To identify questions which can be answered using data To explain that objects can be described using data	Use basic formulas with cell references to perform calculations in a spreadsheet (+, -, *, /) Use the autofill tool to replicate cell data

CURRICULUM PROGRESSION STRAND MAP COMPUTING

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	To create a branching database To identify objects using a branching database To explain why it is helpful for a database to be well structured To compare the information shown in a pictogram with a branching database	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	To outline how grouping and then sorting data allows us to answer questions To explain that tools can be used to select specific data To explain that computer programs can be used to compare data visually To apply my knowledge of a database to ask and answer real-world questions	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	Use the functions SUM, COUNTA, MAX, and MIN in a spreadsheet Use a spreadsheet to sort and filter data Use the functions AVERAGE, COUNTIF, and IF in a spreadsheet Use conditional formatting in a spreadsheet
Curriculum goals:	Children will create physical and on-screen branching databases	Children will pose questions and then use data loggers to automatically collect the data needed to answer those questions	Pupils use tools within a database to order and answer questions about data and create graphs and charts to help solve problems	Children will use spreadsheets to plan an event and answer questions before creating visual representations of data	
Outcomes for this area are embedded across all the following areas of study including the enrichment activities.					

CURRICULUM PROGRESSION STRAND MAP COMPUTING

Skills and Knowledge Progression

Area of Study: Programming

Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
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 (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 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 explore a new programming environment I can identify that each sprite is controlled by the commands I choose To explain that a program has a start 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 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 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 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 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, eg 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 that includes selection To create a controllable system that includes selection 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 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, create it, and evaluate it To explain that formula can be used to produce calculated data To apply formulas to data, including duplicating 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 an conditional statement to compare a variable to a value	Trace the values of variables within a sequence Identify where selection statements can be used in a program Create conditions that use comparison operators (>,<,=) and logic operators (and/or/not) Describe the need for iteration Detect and correct errors in a program (debugging) Independently design and apply programming constructs to solve a problem (subroutine, selection, count-controlled iteration, operators, and variables) Evaluate which type of iteration is required in a program Apply appropriate constructs to solve a problem

CURRICULUM PROGRESSION STRAND MAP COMPUTING

To create a program using my own design To decide how my project can be improved	To identify and fix bugs in a program To design and create a maze-based challenge	To modify an infinite loop in a given program To design and create a project that includes repetition	To design, create and evaluate a program which uses selection	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.	
Curriculum goals:	1) Children make a programmed representation of a piano 2) Children will design and code their own maze-tracing program	1) Children will create programs by planning, modifying, and testing commands to create shapes and patterns 2) Children will design and create a game which uses repetition, applying stages of programming design throughout	1) Children will design and make a working model of a fairground carousel 2) Children will design a quiz in response to a given task and implement it as a program	1) Children will design and program a game which uses variables 2) Children will create their own micro:bit-based step counter.	