Rokeby Park Primary School Computing Progression

Key concepts (Big Ideas) in COMPUTING

*Pupils will develop their knowledge of computing through the three strands of **computer science, information technology** and **digital literacy**. The computing curriculum will equip pupils with the knowledge to become creators of digital technologies and digital artefacts.*

COMPUTER SCIENCE: This focuses on programming & algorithms and data & information. This will provide pupils with the foundational knowledge needed to understand the rest of the curriculum.

Programming

Pupils will learn how to interpret, create and evaluate algorithms. They will be taught to program to accomplish specific goals and to detect and correct errors. Pupils will implement algorithms as programs on digital devices, working with various forms of input and output. They will use sequence, selection and repetition in programs.

Data and information

Pupils will learn how to collect, analyse, evaluate and present data and information

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INFORMATION TECHNOLOGY: Studying this aspect will give children the knowledge of how computers are used in society. They will also explore how computers are used to create digital artefacts such as videos, animations or 3D models.

Computer systems and networks

Pupils will learn about computer systems, networks and how they are used. They will learn about the opportunities for communication and collaboration offered by networks and how to use these services safely and respectfully. They will also learn about the internet and different types of hardware and software.

Creating media

Pupils will learn about the design and development of digital media in different forms. They will learn how to collaborate online, evaluate online content and how to communicate, create and present content in a respectful and responsible way.

DIGITAL LITERACY: This is woven through the key concepts above. Pupils will learn how to…

- **operate devices**
- **search and select information**
- **use digital devices safely and responsibly**

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Knowledge and skills sequencing		COMPUTING						
		EYFS	Y1	Y2	Y3	Y4	Y5	Y6
COMPUTER SCIENCE	**Programming** Related digital media content: Operating devices	Program a floor robot to follow a simple set of instructions. (N) Completes a simple program on an electronic device to achieve a goal (beebots). (R)	Understand what commands are Use commands to control a device Choose commands to achieve a gaol Understand that a program is a set of commands Debug and improve programs Know that an algorithm is a set of instructions	Understand that an algorithm is a set of instructions. Understand that computers read and follow algorithms without thought. Make predictions about programs. Write a program to achieve an aim. Debug and improve programs **Suggested TC unit – Robot Algorithms**	Understand that commands have outcomes. Write a program from a task description. Develop, adapt and refine a program Develop a process for debugging. **Suggested TC unit – Sequencing sounds**	Develop understanding in a **different environment.** Use loops in programs. Compare infinite loops and count-controlled loops. Debug and improve programs **Suggested TC unit – Repetition in shapes**	Control a simple circuit connected to a computer. Design write and create a program that uses selection. Write programs including controlled loops. **Suggested TC unit – Selection in physical computing**	Understand what variables are. Know how to use variables in programs. Write a purposeful program using variables Debug, improve and evaluate projects Write code to control a device for a purpose

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			Suggested TC unit – Moving a robot					Install software onto hardware **Suggested TC unit – Variables in games** **Sensing movement**
COMPUTER SCIENCE	**Data and information** Related digital media content: Operating devices	Group objects by type. (N) Discuss data and information and understand that things can be categorised using labels. (R) Create tally charts. (R)	Understand that objects can be labelled and grouped. Be able to label and group objects based on properties. Choose searches and compare groups. Debug and improve.	Understand that data can be represented in pictograms and tally charts. Be able to present and discuss data. Draw conclusions from represented data. **Suggested TC unit - Pictograms**	Understand that attributes can be used to refine data. Select appropriate attributes required to find desired data. Understand what a branching database is. Use a branching database to sort information.	Understand that data can be collected over time. Be able to use a datalogger. Select what data need to be collected. Answer questions using data.	Compare paper and computer-based databases Explain that tools can be used to select specific data Apply knowledge of a database to ask and answer real-world questions **Suggested TC unit – Flat-file databases**	Understand how spreadsheets organise data. Manipulate data sets using spread-sheets. Write and use formulas. Calculate using spreadsheets.

| | Searching and selecting information | | **Suggested TC unit – Grouping data** | | Compare branching databases/pictograms.

Suggested TC unit – Branching databases | **Suggested TC unit – Data logging** | | **Suggested TC unit – An introduction to spreadsheets** |
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Second Order Concepts

Second order concepts are fundamental knowledge and skills which are transferable across a range of curriculum subjects. For example, we introduce pupils to the concept of 'similarity and difference' early in their education, developing the observational skills and language needed to make comparisons. This is developed and applied as pupils move through the school so they can confidently apply this in all areas of the curriculum by upper Key Stage Two.

A summary of the second order concepts and how they apply to different subjects are provided in the table below.

Curriculum subject	Significance	Similarity and difference	Cause and consequence	Continuity and change	Responsibility	Communication (Oracy & Written)	Enquiry
Computing	Significant inventions and figures from the world of computing	Making comparisons, finding patterns, noticing differences, drawing conclusions	Inputs and outputs, programming	Changes in technology over time, future technology	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying, cyber security, passwords	Using correct terminology, coding language, programming, using technology to communicate and present information	