Lewknor C of E Computing Progression of Skills and Knowledge

	Reception	Infants Years 1 and 2	Lower Juniors Years3 and 4	Upper Juniors Years 5 and 6
Computer Science: Algorithms/ Coding	In the EYFS, children will explore digital apparatus with discussion about what it does, how it works and how to use it safely. They will explore mark making programs on screens, tablets or interactive whiteboard to experiment and communicate their ideas. Additional experiences might also include: 'programming' friends by telling them how to move around like a robot, or use of control toys like remote control cars, BeeBots or apps on iPads. Many of the key online safety messages will be conveyed through guided use, continuous provision and adult modelling. Additionally, and importantly, this will be alongside and with the involvement of parents and carers at home. Listen to young children talking about their online world and use this overheard talk to engage with them and find out	• Understand what an algorithm is and is able to express simple linear (non-branching) algorithms symbolically. • Understand that computers need precise instructions. • Demonstrate care and precision to avoid errors.	• Design solution (algorithms) that use repetition and two-way selection i.e. if, then and else. • Use diagram to express solutions. • Use logical reasoning to predict outputs, showing an awareness of inputs.	• Understand that iteration is the repetition of a process such as a loop. • Recognise that different algorithms exist for the same problem. • Represent solutions using a structured notation. • Identify similarities and differences in situations and can use these to solve problems (pattern recognition).
Computer Science: Programming and Development	Children follow instructions involving several ideas or actions. They answer 'how' and 'why' questions about their experiences and in response to stories or events.	• Know that users can develop their own programs, and can demonstrate this by creating a simple program in an environment that does not rely on text e.g. programmable robots etc. • Executes, checks and changes programs. • Understand that programs execute by following precise instructions.	• Create programs that implement algorithms to achieve given goals. • Declare and assign variables. • Use post-tested loops e.g. 'until', and a sequence of selection statements in programs, including an if, then and else statement	• Understands the difference between, and appropriately use if, then and else statements. • Use variable and relational operators within a loop to govern termination. • Design, write and debug modular programs using procedures. • Understand that programming bridges the gap between algorithmic solutions and computers. • Use a range of operators and expressions, and apply them in the context
Information Technology: Data and Data Representation	Children sing songs, make music and dance, and experiment with ways of changing them. They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	• Recognise that digital content can be represented in many forms. • Distinguish between some of these forms and can explain the different ways that they communicate information.	• Understand the difference between data and information. • Know why sorting data in a flat file can improve searching for information. • Use filters or can perform single criteria searches for information.	• Perform more complex searches for information • Analyse and evaluate data and information, and recognise that poor quality data leads to unreliable results, and inaccurate conclusions. • Know that digital computers use binary to represent all data. • Understand how bit patterns represent numbers and images. • Know that computers transfer data in binary. • Query data using a typical query language.
Information Technology: Hardware and processing	Children sing songs, make music and dance, and experiment with ways of changing them. They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	• Recognise that a range of digital devices can be considered a computer. • Recognise and can use a range of input and output devices. • Understand how programs specify the function of a general-purpose computer.	• Know that computers collect data from various input devices, including sensors and application software. • Understand the difference between hardware and application software, and their roles within a computer system	• Recognise and understand the function of the main internal parts of basic computer architecture. • Understand the concepts behind the fetch-execute cycle. • Know that there is a range of operating systems and application software for the same hardware.
Digital Literacy: Purpose and understanding	Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.	• Use software under the control of the teacher to create, store and edit digital content using appropriate file and folder names. • Understand that people interact with computers. • Share their use of technology in school. • Know common uses of information technology beyond the classroom. • Talk about their work and makes changes to improve it	• Collect, organise and present data and information in digital content. • Create digital content to achieve a given goal through combining software packages and internet services to communicate with a wider audience e.g. blogging • Make appropriate improvements to solutions based on feedback received, and can comment on the success of the solution.	• Makes judgement about digital content when evaluating and repurposing it for a given audience. • Recognise the audience when designing and creating digital content. • Understand the potential of information technology for collaboration when computers are networked. • Evaluate the appropriateness of digital devices, internet services and application software to achieve given goals. • Recognise ethical issues surrounding the application of information technology beyond school. • Design criteria to critically evaluate the quality of solutions, use the criteria to identify improvements and can make appropriate refinements to the solution.
Digital Literacy: Communication and Online Safety	Children are confident to try new activities and say why they like some activities more than others. They are confident to speak in a familiar group, will talk about their ideas, and will choose the resources they need for their chosen activities. They say when they do or don't need help.	• Obtain content from the world wide web using a web browser. • Understand the importance of communicating safely and respectfully online, and the need for keeping personal information private. • Know what to do when concerned about content or being contacted.	• Understand the difference between the internet and internet service e.g. world wide web. • Show an awareness of, and can use a range of internet services. • Recognise what is acceptable and unacceptable behaviour when using technologies and online services. • Know how to report when concerned about content or being contacted online.	• Understand how to effectively use search engines, understand how search engines rank search results. • Select, combine and use internet services. • Understand how to construct static web pages using HTML and CSS. • Demonstrate responsible use of technologies and online services, and know a range of ways to report concerns