Computing at Longford

A sound knowledge and understanding of ICT and Computing enables and prepares pupils to be active participants in a rapidly-changing world where work, and other activities, are increasingly transformed by access to varied and developing technology.

Intent

The aims of teaching Computing at Longford Primary Academy are so pupils are able to find, explore, analyse, exchange and present information and become safe, responsible, confident and creative users of information and communication technology.

They will be taught to understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.

Pupils will learn to analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems

They will learn how to evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.

Implementation

Computing is an integral part of modern life and therefore provides a wealth of learning opportunities, explicitly within computing and also across other curriculum subjects.

The school uses the Knowelsey scheme of work as a basis for teaching computing. Teachers adapt this as they wish, to fit into other areas of the curriculum and pupils' areas of interest.
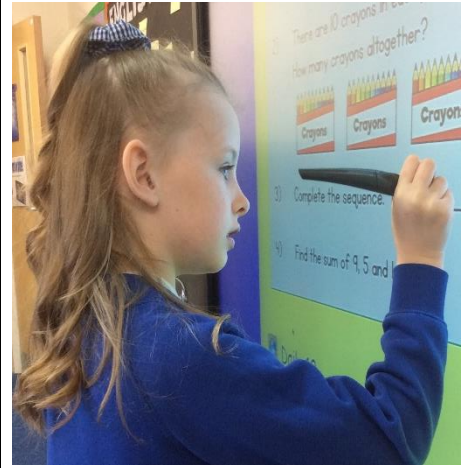
Use of this scheme ensures children's computational thinking is developed, improving their ability to solve problems in a creative, logical and collaborative way – through repeated programming opportunities and opportunities to build understanding and apply the concepts of computer science, information technology and digital literacy.

Teachers may choose to teach sessions weekly or to block it where appropriate, depending on resource restrictions. Teachers also use computing to enhance other subjects, such as reading, phonics and mathematics.

E safety should be an intrinsic part of teaching computing and addressed regularly, based on the needs of the pupils.

Impact

After the implementation of our computing curriculum, children will be digitally literate and equipped to use the skills they have developed to take an active role in today's digital society. They will have a secure knowledge of how to use a range of technology effectively and safely. We want all children to understand the consequences of using the internet and have a range of strategies to keep themselves safe online wherever they are. As children progress, they will become more confident in their abilities in Computing, they will develop independence and resilience in key life skills such as problem-solving, logical thinking and self-evaluation.

Knowledge, Understanding & Skills

Year group	Computer Science	Information Technology	Digital Literacy
KS 1	Understands what an algorithm is and is able to express simple linear (non-branching) algorithms symbolically. Understands that computers need precise instructions. Demonstrates care and precision to avoid errors. Knows 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. Understands that programs execute by following precise instructions. Understands that computers have no intelligence and that computers can do nothing unless a program is executed. Recognises that all software executed on digital devices is programmed.	Recognises that digital content can be represented in many forms. Distinguishes between some of these forms and can explain the different ways that they communicate information. Obtains content from the world wide web using a web browser. Uses software under the control of the teacher to create, store and edit digital content using appropriate file and folder names. Understands that people interact with computers. Talks about their work and makes changes to improve it.	Understands the importance of communicating safely and respectfully online, and the need for keeping personal information private. Knows what to do when concerned about content or being contacted. Knows common uses of information technology beyond the classroom. Shares their use of technology in school.

Lower KS2	Understands that algorithms are implemented on digital devices as programs. Designs simple algorithms using loops, and selection i.e. if statements. Uses logical reasoning to predict outcomes. Detects and corrects errors i.e. debugging, in algorithms. Uses arithmetic operators, if statements, and loops, within programs. Uses logical reasoning to predict the behaviour of programs. Detects and corrects simple semantic errors i.e. debugging, in programs. Recognises that a range of digital devices can be considered a computer. Recognises and can use a range of input and output devices. Understands how programs specify the function of a computer.	Recognises different types of data: text, number. Appreciates that programs can work with different types of data. Recognises that data can be structured in tables to make it useful. Navigates the web and can carry out simple web searches to collect digital content. Uses technology with increasing independence to purposefully organise digital content. Uses a variety of software to manipulate and present digital content: data and information. Shares their experiences of technology in school and beyond the classroom. Talks about their work and makes improvements to solutions based on feedback received.	Demonstrates use of computers safely and responsibly, knowing a range of ways to report unacceptable content and contact when online. Shows an awareness for the quality of digital content collected.
Upper KS2	Designs solutions (algorithms) that use repetition and two-way selection i.e. if, then and else. Uses diagrams to express solutions. Uses logical reasoning to predict outputs, showing an awareness of inputs. Creates programs that implement algorithms to achieve given goals. Declares and assigns variables. Uses post-tested loop e.g. 'until', and a sequence of selection statements in programs, including an if, then and else statement. Knows that computers collect data from various input devices, including sensors and application software. Understands the difference between hardware and application software, and their roles within a computer system. Understands the difference between the internet and internet service e.g. world wide web.	Understands the difference between data and information. Knows why sorting data in a flat file can improve searching for information. Uses filters or can perform single criteria searches for information. Shows an awareness of and can use a range of internet services e.g. VOIP. Collects, organises and presents data and information in digital content. Creates digital content to achieve a given goal through combining software packages and internet services to communicate with a wider audience e.g. blogging. Makes appropriate improvements to solutions based on feedback received, and can comment on the success of the solution.	Recognises what is acceptable and unacceptable behaviour when using technologies and online services.