



LAMBOURN C of E PRIMARY SCHOOL COMPUTING CURRICULUM



Intent

We aim to provide a high-quality and engaging computing education that will equip our pupils to become independent, skilled and computational thinkers. Through exploration and investigation activities, we develop our children's creative and problem-solving skills so they are able to adapt and develop a life-long fascination with our ever-changing technological world. Our curriculum carefully plots the development of knowledge and understanding so that our pupils become equipped to use information technology confidently and effectively and they learn how digital systems work through learning age related computer science concepts. We strive to teach our pupils how to use technology purposefully, safely, responsibly and positively so that our pupils become digitally literate – able to not just understand and master IT processes, but to also manipulate and use them to express themselves creatively and imaginatively.

Implementation

EYFS

Our curriculum is based on the Statutory Framework for the Early Years Foundation Stage document, Department for Education, 2021. We use the supporting guidance: Development Matters in the Early Years Foundation Stage (EYFS), Department for Education, 2021 and Birth to Five Matters, Early Education, 2021 to support our planning. . Key skills and concepts are revisited and embedded in order to secure a mastery of skills, knowledge and understanding. Our curriculum is based on the National Curriculum, although at Lambourn, key skills and knowledge are revisited and embedded in order to secure a mastery of understanding. Our curriculum is designed to help pupils to remember and master in long term the content and skills they have been taught. We have identified within the curriculum 'big' ideas or key concepts. These are threaded through the curriculum so they are repeatedly revisited, deepening the pupils' learning and developing strong interrelated links, or schema, connecting new information with pre existing knowledge, skills, and concepts, integrating new learning into larger ideas.

The key concepts / themes in Computing are used as key teaching points in computing lessons:

Computational thinking, **programming and coding**, **digital literacy and online safety**, **information technology** and **computer systems and networks**

Our vulnerable learners, including our Pupil Premium learners and SEND, are supported through additional resources. In our PSHE curriculum, we teach our children about the importance of inclusion, teamwork and respect for others. This can be readily applied to teaching and learning in Computing.

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In our curriculum plans below we have outlined the progression of knowledge and skills. Key skills and knowledge are revisited, developed and embedded in order to secure a mastery of skills, concepts and understanding. Key vocabulary that we want the children to be able to learn and use independently are recorded in bold.

We teach computing as a specific subject area, with a clear intention of developing our pupils' skills, knowledge and experiences through our computing curriculum. We also recognize the links that Computing has with all the other subject areas and the ways these links can be used to embed and enrich understanding. Digital research will be taught through other foundation subjects as appropriate.

E-Safety is an important element of our curriculum. There is an E-Safety focus at the beginning of each school year, introduced in a whole school collective worship and then continued in the classrooms. It is also an on-going feature of all elements of computing work, but also reinforced through cross-curricular work, including PSHE. We teach our children the regulations and protocols associated with accessing and using IT materials; we give them opportunities to work with age-appropriate materials and teach them to understand and successfully manage the risks.

We have a range of resources used as part of our computing curriculum. Laptops are our central hardware resource, but we also have iPads, Beebots and Bluebots, as well as a wide range of APP resources.

Impact

The impact and measure of our curriculum is the extent our children acquire the skills, knowledge, vocabulary and enthusiasm for learning computing. We aim for our pupils to show high aspirations and a lifelong engagement with information technology. Each unit of work has an impact assessment activity the outcome of which is tracked by the teacher. This impact assessment is based on the key concepts within the unit and associated vocabulary. The Computing Subject Leader reviews the impact of the curriculum at least once a term by talking to pupils, looking through books etc. They report findings and any recommendations to SLT.

Assessment

Assessment will be carried out differently depending on the unit we are looking at. The children will either be assessed through:

- Observation and discussion
- Use of technology
- Producing a final product or code

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The table below includes the most relevant statements from the Early Learning Goals in the EYFS statutory framework and the *Development Matters* age ranges for three- and four-year-olds and reception. These statements align with the computing programme of study, helping to ensure a smooth transition into Year 1.

The most relevant statements for computing are taken from the following areas of learning:

- Personal, Social and Emotional Development
- Physical Development
- Understanding the World
- Expressive Arts and Design

Year 1

	<u>Autumn Term</u>	<u>Spring Term</u>	<u>Summer Term</u>
<u>Unit Description</u>	Know that technology can be used safely, responsibly and respectfully, that it is important to balance online and offline activities, and that information technology is used to support learning in school and everyday life in the wider world.	know that computers can be controlled using input devices such as keyboards, mice and trackpads, and that these tools allow users to enter, edit and interact with information on a computer.	know that computers and robots follow instructions called algorithms, that the order of instructions is important, and that programs can be improved by finding and fixing mistakes through debugging.
<u>Vocabulary</u>	technology, online, safe, responsible, respectful	computer, keyboard, mouse, click	instruction, sequence, algorithm, debug, bug
<u>Concepts</u>	Digital Literacy and Online Safety and Computer Systems and Networks	Computer Systems and Networks	Computational Thinking and Programming and Coding
<u>Impact Assessment</u>	Children's understanding will be assessed through verbal discussion, questioning and observation of their ability to explain key concepts and apply their knowledge.	Children's understanding will be assessed through their practical use of technology and their ability to apply skills independently.	Children's understanding will be assessed through their practical use of technology and their ability to apply skills independently.

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Year 2

	<u>Autumn Term</u>	<u>Spring Term</u>	<u>Summer Term</u>
<u>Unit Description</u>	know that personal information should be kept private online, that their actions contribute to their digital footprint, and that technology can be used to explore, investigate and organise information.	know that digital devices store and organise information, and that files such as images can be searched for, saved, moved and presented using technology.	know that computers can be used to create and edit music, that music is made up of patterns and sounds, and that digital work can be improved through reviewing and refining.
<u>Vocabulary</u>	personal information, private, online safety, data	digital device, memory, file, folder, save, download, organise	pattern, sound, beat, review, refine, digital
<u>Concepts</u>	Digital Literacy and Online Safety and Computer Systems and Networks	Information Technology	Computational thinking, Programming and Coding and Information Technology
<u>Impact Assessment</u>	Children's understanding will be assessed through verbal discussion, questioning and observation of their ability.	Children's understanding will be assessed through their practical use of technology and their ability to apply skills independently.	Children's understanding will be assessed through their completed digital product.

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Year 3

	<u>Autumn Term</u>	<u>Spring Term</u>	<u>Summer Term</u>
<u>Unit Description</u>	know that they are part of an online community and should act as responsible digital citizens, that strong passwords help to protect personal information, and that technology can be used to communicate safely through tools such as email.	know that keyboards can be used to input and edit information, and that text can be formatted in different ways to make digital work clear and effective.	know that computer programs are created using instructions, that code can be repeated using loops, and that different sprites can be programmed with their own actions to create animations.
<u>Vocabulary</u>	online community, privacy, password, email, genuine, phishing	keyboard, symbol, text, save, edit, select, format	code, program, algorithm, sprite, animation, debug, command
<u>Concepts</u>	Digital Literacy and Online Safety and Computer Systems and Networks	Information Technology	Computational thinking and Programming and Coding
<u>Impact Assessment</u>	Children's understanding will be assessed through verbal discussion, questioning and observation of their ability.	Children's understanding will be assessed through their practical use of technology and their ability to apply skills independently.	Children's understanding will be assessed through their completed digital product.

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Year 4

	<u>Autumn Term</u>	<u>Spring Term</u>	<u>Summer Term</u>
<u>Unit Description</u>	know that digital citizens are responsible for their actions online, that online activity can influence their digital identity, and that digital content, including AI-generated images, should be used thoughtfully and ethically.	know that a range of keyboard shortcuts and formatting tools can be used to create, organise and present digital documents effectively.	know that computer games are created using code, that programs can use events and conditions to control gameplay, and that testing and improving code helps to create a better user experience.
<u>Vocabulary</u>	digital citizen, content, edit, manipulate, artificial intelligence (AI), ethics	keyboard, text, format, insert, select, document	code, program, algorithm, sprite, condition, debug, test
<u>Concepts</u>	Digital Literacy and Online Safety and Computer Systems and Networks	Information Technology	Computational thinking and Programming and Coding
<u>Impact Assessment</u>	Children's understanding will be assessed through verbal discussion, questioning and observation of their ability.	Children's understanding will be assessed through their practical use of technology and their ability to apply skills independently.	Children's understanding will be assessed through their completed digital product.

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Year 5

	<u>Autumn Term</u>	<u>Spring Term</u>	<u>Summer Term</u>
<u>Unit Description</u>	know that their online actions contribute to a digital footprint, that they have a responsibility to behave positively and safely online, and that technologies such as barcodes, QR codes and RFID are used to store and share information in everyday life.	know that digital documents can combine text, images and layout features to communicate information effectively, and that it is important to recognise and evaluate the reliability of information found online.	know that variables can be used to store and change information within a program, and that code can be adapted and improved to create personalised and interactive digital projects.
<u>Vocabulary</u>	RFID, QR, data, privacy, digital footprint	fake news, reliable, source, research, layout, document, edit, audience	variable, sprite, backdrop, sound effect, size, colour, test, personalise
<u>Concepts</u>	Digital Literacy and Online Safety and Computer Systems and Networks	Information Technology	Computational thinking and Programming and Coding
<u>Impact Assessment</u>	Children's understanding will be assessed through verbal discussion, questioning and observation of their ability.	Children's understanding will be assessed through their practical use of technology and their ability to apply skills independently.	Children's understanding will be assessed through their completed digital product.

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Year 6

	<u>Autumn Term</u>	<u>Spring Term</u>	<u>Summer Term</u>
<u>Unit Description</u>	know that online content can influence our thoughts and choices, that it is important to think critically about the information we encounter online, and that computers use data and binary code to store and process information.	know that spreadsheets can be used to store, organise and analyse data, and that formulas and different presentation methods can help users interpret information effectively.	know that programs can be created using code to make sprites interact, respond and produce sounds, and that coding can be tested, edited and improved to create more effective digital projects.
<u>Vocabulary</u>	media balance, clickbait, critical thinking, bias, data, network	spreadsheet, data, cell, formula, sort, filter	code, program, algorithm, sprite, debug, test and edit
<u>Concepts</u>	Digital Literacy and Online Safety and Computer Systems and Networks	Information Technology	Computational thinking and Programming and Coding
<u>Impact Assessment</u>	Children's understanding will be assessed through verbal discussion, questioning and observation of their ability.	Children's understanding will be assessed through their practical use of technology and their ability to apply skills independently.	Children's understanding will be assessed through their completed digital product.

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Key Stage 3

Teaching should build progressively on pupils' understanding of computing, enabling them to develop the knowledge, skills and confidence to participate effectively in an increasingly digital world. Teaching should focus on computational thinking, programming, digital literacy and online safety, ensuring pupils gain a secure understanding of key concepts and can apply these across a range of contexts. Pupils should learn to create digital content, solve problems through logical reasoning, communicate responsibly using technology and understand the principles that underpin digital systems. Learning should promote creativity, resilience and independence while preparing pupils for future study and lifelong participation in a technology-rich society.

Pupils should be taught to:

- design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems
- understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem
- use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions
- understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be

able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]

- understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems
- understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits
- undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users
- create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability * understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns.

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