Computing Progression Map

This progression map outlines how pupils develop both **substantive knowledge** and **disciplinary knowledge** in Computing from Nursery through to the end of Key Stage 2. It ensures that learning is carefully sequenced, cumulative, and progressive, so that pupils build secure foundations in language learning and increasingly communicate with confidence, accuracy and independence.

In the Early Years Foundation Stage, computing is embedded through play-based learning and adult-guided activities, primarily within the areas of Understanding the World and Expressive Arts and Design. Children explore technology, create digital content, give simple instructions and organise information in age-appropriate ways, providing strong foundations for future learning.

From Years 1 to 6, Computing is taught as a discrete subject using the Teach Computing curriculum, developed by the National Centre for Computing Education. Components are selected and sequenced to ensure clear progression across the four strands of computing, with key knowledge and skills revisited and built upon year on year.

At Ordsall, we define knowledge in Computing as follows:

Substantive knowledge: The facts, concepts and vocabulary pupils are taught and expected to remember in computing, including:

- Computers and digital devices
- Networks and the internet
- Algorithms, programs, variables and loops
- Data, databases and spreadsheets
- Media types, tools and copyright
- Online safety and responsible use

Disciplinary knowledge: An understanding of how computing works and how computer scientists think including:

- Designing, writing and debugging algorithms and programs
- Using logical reasoning to predict and explain outcomes
- Evaluating digital systems and content
- Organising, analysing and interpreting data
- Applying safe, responsible and ethical behaviours online

Threads

In Computing, key threads run throughout the curriculum, providing continuity and coherence as pupils move through each year group. These recurring strands help pupils make connections between components of learning, revisit and embed prior learning, and deepen their understanding of computing concepts. We have identified the following core threads within our Computing curriculum:

Computing Systems and Networks: Understanding what computers are, how they work, how they connect and how information is shared safely and responsibly.

Creating Media: Using digital tools to create, edit and evaluate media such as images, audio, video and webpages for different purposes.

Programming: Designing, writing, testing and debugging programs to solve problems using algorithms, repetition, selection and variables.

Data and Information: Collecting, organising, analysing and presenting data to answer questions and represent real-world situations.

Disciplinary Knowledge

Across all components, pupils are supported to develop the following disciplinary approaches:

Understanding Digital Systems	Recognising how hardware, software and networks work together and how digital systems are used in the wider world.
Algorithmic Thinking	Breaking problems down into steps, creating algorithms, predicting outcomes and refining solutions.
Programming and Debugging	Creating programs, identifying errors, testing solutions and improving efficiency and accuracy.
Data Handling and Interpretation	Collecting data, identifying patterns, organizing information and using digital tools to answer questions.
Evaluating and Using Technology Responsibly	Evaluating digital content and systems, considering audience and purpose, and applying online safety principles.

Progression Model (Teach Computing)

Computing at Ordsall follows the Teach Computing progression model, ensuring that learning increases in complexity, independence and abstraction as pupils move through school.

- **Early Years** – exploring technology through play, curiosity and real-world experiences.
- **Key Stage 1** – building foundational understanding of technology, algorithms and data.
- **Lower Key Stage 2** – developing structured programming, networks and data handling.
- **Upper Key Stage 2** – applying computing concepts independently, including variables, databases and collaborative systems.

Knowledge is deliberately revisited so pupils can connect new learning to prior understanding.

Coverage Map

Thread	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computing Systems and Networks	**Technology in Our World** Exploring everyday technology and learning that digital devices are used by adults and children.	**Using Technology Purposefully** Using digital devices to support learning, and beginning to understand how to use technology safely and responsibly.	**Technology Around Us** Recognising technology in school and using it responsibly.	**Information Technology Around Us** Identifying IT and how its responsible use improves our world in school and beyond.	**Connecting Computers** Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks.	**The Internet** Recognising that the internet is a network of networks including the world wide web, and why we should evaluate online content.	**Systems and Searching** Recognising IT systems in the world and how some can enable searching on the internet.	**Communication and Collaboration** Exploring how data is transferred by working collaboratively online.
Creating Media	**Digital Mark-Making** Exploring simple digital tools to make marks, images or sounds.	**Creating Digital Content** Using digital tools to draw, take photographs and make simple recordings to represent ideas and learning.	**Digital Painting** Choosing appropriate tools in a program to create art, and making comparisons with working nondigitally.	**Digital Photography** Capturing and changing digital photographs for different purposes.	**Stop-frame Animation** Capturing and editing digital still images to produce a stop frame animation that tells a story.	**Audio Production** Capturing and editing audio to produce a podcast, ensuring that copyright is considered.	**Video Production** Planning, capturing, and editing video to produce a short film.	**Webpage Creation** Designing and creating webpages, giving consideration to copyright, aesthetics and navigation.

Thread	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Programming	**Giving Instructions** Giving simple instructions to people or toys and exploring sequences through play.	**Sequencing and Predicting** Creating simple sequences of instructions, predicting outcomes and making changes when things do not work, including adult-led use of programmable toys.	**Moving a Robot** Writing short algorithms and programs for floor robots, and predicting program outcomes.	**Robot Algorithms** Creating and debugging programs, and using logical reasoning to make predictions.	**Sequencing Sounds** Creating sequences in a block-based programming language to make music.	**Repetition in Shapes** Using a text-based programming language to explore count-controlled loops when drawing shapes.	**Selection in Physical Computing** Exploring conditions and selection using a programmable microcontroller.	**Variables in Games** Exploring variables when designing and coding a game.
Data and Information	**Sorting Objects** Sorting and grouping objects by simple properties such as colour or type.	**Comparing and Grouping Information** Grouping objects and talking about patterns, similarities and differences.	**Grouping Data** Exploring object labels, then using them to sort and group objects by properties.	**Pictograms** Collecting data in tally charts and using attributes to organise and present data on a computer.	**Branching Databases** Building and using branching databases to group objects using yes/no questions.	**Data Logging** Recognising how and why data is collected over time, before using data loggers to carry out an investigation.	**Flat-file Databases** Using a database to order data and create charts to answer questions.	**Introduction to Spreadsheets** Answering questions by using spreadsheets to organise and calculate data.

End of Key Stage 2 Outcomes

By the end of Year 6, pupils at Ordsall will:

- Understand how computers, networks and digital systems operate
- Design, write and debug programs using repetition, selection and variables
- Create purposeful digital media for different audiences
- Collect, analyse and present data using appropriate digital tools
- Use technology safely, responsibly and respectfully

Progression in Knowledge

Detailed information about the progression of learning, including the development and use of subject-specific vocabulary, can be found within the Teach Computing Curriculum Maps and the Teach Computing Curriculum Vocabulary lists.