



Shepherdswell Academy

Computing Curriculum - Overview



Why Teach Computing?

Technology is everywhere and will play an important part in students' lives, therefore, we aim to prepare our learners for their future by giving them the opportunities to gain knowledge and develop skills that will equip them for an ever-changing digital world. Knowledge and understanding of ICT is of increasing importance for children's future both at home and for employment.

Our Computing curriculum focuses on a progression of understanding in:

- digital literacy
- computer science
- information technology
- online safety to ensure that children become competent in safely using, as well as understanding, technology.

These strands are revisited repeatedly through a range of themes during children's time in school to ensure the learning is embedded and skills are successfully developed. Our intention is that Computing also supports children's creativity and cross curricular learning to engage children and enrich their experiences in school.

E-Safety

E-Safety is an element of the computing curriculum which will be taught both within the curriculum and as a discrete subject.

Teaching will promote positive uses of technology, and will acknowledge the large role that technology plays in children's everyday lives.

Children will understand how to use technology safely, respectfully and responsibly to deal with a variety of situations which may occur in or out of school.

Children will be able to identify acceptable and unacceptable behaviours and will have a variety of strategies they are familiar with to report concerns about content and contact.

Pedagogy

Underpinned by the research carried out by the National Centre for Computing Education, our curriculum is based around 12 key pedagogical principles. These principles allow teachers to use a range of strategies to deliver computing effectively, encouraging computation thinking and problem solving.

They are:

- Lead with concepts
- Structure lessons
- Make concrete
- Unplug, unpack, repack
- Work together
- Read and explore first
- Create projects
- Model everything
- Get hands-on
- Challenge misconceptions
- Add variety
- Foster program comprehension

The 10 Big Ideas

Curriculum maps detail the sequencing of substantive knowledge to enable pupils to build schemata of important concepts over time through ten 'big ideas'

| | | | |
|--|----|------------------------|--|
| | NW | Networks | Understand how networks can be used to retrieve and share information and come with associated risks |
| | CM | Creating Media | Select and create a range of media including text, images, sounds and video |
| | DI | Data & Information | How is data stored, organised and used to represent real world artefacts and scenarios |
| | DD | Design & Development | The activities involved in planning, creating and evaluating computing artefacts |
| | CS | Computing Systems | What is a computer, how do it's constituent parts function together as a whole |
| | IT | Impact of Technology | How individuals, systems and society as a whole interact with computer systems |
| | AL | Algorithms | Being able to comprehend, design, create and evaluate algorithms |
| | PG | Programming | Creating software to allow computers to solve problems |
| | ET | Effective Use of Tools | Use software tools to support computing work |
| | SS | Safety & Security | Understanding risks when using technology and how to protect individuals and systems |



Shepherdswell Academy

Substantive Curriculum - Content Overview



Networks

Creating Media

Data and Information

Design and Development

Computing Systems

Impact of Technology

Algorithms

Programming

Effective Use of Tools

Safety and Security

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|----------|---|---|--|---|--|---|
| Autumn 1 | Programming A Moving a robot Writing short algorithms and programs for floor robots and predicting program outcomes | Creating Media Making Music Using a computer as a tool to explore rhythms and melodies, before creating a musical comparison | Data and Information Branching databases Building and using branching databases to group objects using yes/no questions. | Data and Information Data logging Recognising how and why data is collected over time, begin using data loggers to carry out an investigation. | Creating media Vector drawing Creating images in a drawing program by using layers and groups of objects. | Programming A Variables in games Exploring variables when designing and coding a game |
| | Autumn 2 | Creating Media Digital painting Choosing Appropriate tools in a program to create art and making comparisons with working non-digitally. | Data and Information Pictograms Collecting data in tally charts and using attributes to organise and present data on a computer. | Creating Media Stop-frame animation Capturing and editing digital still images to produce a stop-frame animation that tells a story. | Programming A Repetition in shapes Using a text-based programming language to explore count-controlled loops when drawing shapes. | Programming A Selection in physical computing Exploring conditions and selection using a programmable microcontroller. |
| Spring 1 | | Data and Information Grouping data Exploring object labels, then using them to sort and group objects by properties. | Programming A Robot algorithms Creating and debugging programs and using logical reasoning to make predictions. | Programming A Sequencing Sounds Creating sequences in a block-based programming language to make music. | Creating Media Photo editing Manipulating digital images and reflecting in the impact of changes and whether the required purpose is fulfilled. | Data and Information Flat-file databases Using a database to order data and create charts to answer questions. |
| | Spring 2 | Programming B Programming animations Designing and programming the movement of a character on screen to tell stories. | Creating Media Digital Photography 2 Capturing and changing digital photographs for different purposes. | Creating Media Desktop Publishing Creating documents by modifying text, images, and page layouts for a specified purpose. | Programming B Repetition in games Using a block-based programming language to explore count-controlled and infinite loops when creating a game. | Programming B Selection in quizzes Exploring selection in programming to design and code an interactive quiz. |
| Summer 1 | | Creating Media Digital writing Using a computer to create and format text, before comparing to writing non-digitally. | Programming B Programming quizzes Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz. | Programming B Events and actions in programs Writing algorithms and programs that use a range of events to trigger sequences of actions. | Creating Media Audio editing Capturing and editing audio to produce a podcast, ensuring that copyright is considered. | Creating Media Video editing Planning, capturing, and editing video to produce a short film. |
| | Summer 2 | Computer systems and networks Technology and around us Recognising technology in school and using it responsibly. | Computing Systems and networks Technology around us Recognising technology in school and using it responsibly. | Computing systems and networks Connecting computers Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks. | Computing systems and networks The internet Recognising the internet as a network of networks including the WWW, and why we should evaluate online content. | Computer systems and networks Sharing information Identifying and exploring how information is shared between digital systems. |