

# Stoneraise School Curriculum Statement



**Subject:** Computing

**Subject Leader:** Bernadette Cook

## Overarching Curriculum Statement

At Stoneraise School, our vision statement is, 'Living and learning together to care for each other and our world.' Our curriculum has been designed to focus the children's learning on this statement. We are based on the rural outskirts of the historic city of Carlisle and the majority of our pupils travel from local housing estates within the city. We try to make the very most of our beautiful surroundings at every opportunity. From Hadrian's Wall to the mountains of the Lake District, we ensure that our children gain an awe of the majestic landscape on our doorstep. Developing friendships, keeping ourselves safe and preparing our children to be the 'citizens of tomorrow' are all key parts of our curriculum as we follow the journey on our 'Pathway to Success'.

Our curriculum ensures excellent coverage of the National Curriculum (Years 1-6) and Foundation Stage Early Years Curriculum (Reception children). We have fully embraced the higher expectations set out in both curriculums and have devised our own units of work for each subject area so that we can ensure a sound progression of learning. We also have a core team of specialist teachers who are passionate about their curriculum area; these teachers work with different groups of children each year. Our team includes PE, music, art and computing specialists.

Our 'Sticky Knowledge' approach is used to help children to be aware of what they will learn through each unit or topic and help staff and pupils to make an assessment of what has been learned. We share key knowledge that we would like to 'stick' in the children's long term memory, present vital vocabulary they will come across to encourage the children to expand and develop their use of a wide range of words. Sticky notes (which include word banks, diagrams and other important information) are often used to support the children in the short term in their learning.

## Subject Curriculum Statement

The Y1-Y6 curriculum is largely based on the Teach Computing scheme, which uses the National Centre for Computing Education's computing taxonomy to ensure comprehensive coverage of the subject. The curriculum uses a range of different experiences for children including physical computing with Bee-bots in KS1; Microbits, Crumble controllers and electronic buggies in KS2. We also look for opportunities for older children to take part in national competitions or challenges where they can use their IT and computing skills in real-life situations. In the autumn term, all Y3-Y6 children prepare for and take part in the Bebras Computing Challenge, which encourages children's problem solving and computational thinking. Most years, we have a student invited to then

take part in the follow on Oxford Computing Challenge. Y6 children take part in external STEM activities/competitions such as code cracking competitions, which allow them to use their IT/coding skills. We ensure that Y6 children are well prepared for the computing curriculum they will study at secondary school. The Teach Computing Scheme covers aspects of online safety or digital citizenship and these are covered in more detail in more detail in the PSHE curriculum.

### **Intent**

We want children to enjoy using technology and to be able to use it to create, manage, organise and collaborate. We aim for students to be digitally competent, have a range of transferable skills and be responsible online citizens. Children experience a spiral curriculum where computing themes such as computing systems and networks, creating media, programming, data and information are revised regularly so that children can consolidate and build on prior learning. By the end of Y6, we want children to be well prepared for the computing curriculum they will experience at KS3 and to be responsible online citizens.

### **Implementation**

The National Curriculum purpose of study states that: 'The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world'.

The Teach Computing curriculum is structured in units which cover ten strands:

- Algorithms — Be able to comprehend, design, create, and evaluate algorithms
- Computer networks — Understand how networks can be used to retrieve and share information, and how they come with associated risks
- Computer systems — Understand what a computer is, and how its constituent parts function together as a whole
- Creating media — Select and create a range of media including text, images, sounds, and video
- Data and information — Understand how data is stored, organised, and used to represent real-world artefacts and scenarios
- Design and development — Understand the activities involved in planning, creating, and evaluating computing artefacts
- Effective use of tools — Use software tools to support computing work
- Impact of technology — Understand how individuals, systems, and society as a whole interact with computer systems
- Programming — Create software to allow computers to solve problems
- Safety and security — Understand risks when using technology, and how to protect individuals and systems

## **Scheme of Work Selection**

Most of our computing teaching is based on the Teach Computing scheme of work. It was selected after a review of other existing schemes of work. The scheme uses the National Centre for Computing Education's computing taxonomy to ensure comprehensive coverage of the subject. Resources are updated regularly by subject experts, using the latest pedagogical research and teacher feedback CPD and Training. The scheme uses a full range of resources which are suitable for all pupils irrespective of their skills, background, and additional needs. It also prepares children with the transferable skills they will need at secondary school.

Teaching Programming in Primary Schools: this course was from Teach Computing and delivered by Raspberry Pi Foundation  
Primary Programming and Algorithms: this course was from Teach Computing and delivered by STEM learning

Assessment of primary computing

Creating an inclusive classroom: approaches to supporting learners with SEND in computing

Getting started in year 1- short course

Getting started in year 2- short course

Getting started in year 3 – short course

Getting started in year 4 – short course

Getting started in year 5 – short course

Getting started in year 6 – short course

## **Assessment Strategy**

Every lesson includes formative assessment opportunities for teachers to use. These opportunities are listed in the lesson plans and are included to ensure that misconceptions are recognised and addressed if they occur. They vary from teacher observation or questioning, to marked activities.

Every unit includes an optional summative assessment framework in the form of either a multiple choice quiz (MCQ) or a rubric. All units are designed to cover both skills and concepts from across the computing national curriculum. Units that focus more on conceptual development include an MCQ. Units that focus more on skills development end with a project and include a rubric. Children usually submit practical work on Google Classroom and conceptual development is assessed through Google Forms, which are marked and children view their scores. Previous knowledge is also assessed through sticky knowledge quizzes and teacher observations.

## **Inclusive Curriculum**

At Stoneraise School, we believe that every child can make progress and achieve. We ensure that our curriculum and the teaching and learning opportunities provided meet the needs of all of our pupils. We respond to pupils' diverse learning needs, and seek to identify potential barriers to learning quickly. We support parents through EHCP needs assessments and work closely with specialist teachers to ensure our curriculum is accessible. Targeted support through our Assess Plan Do Review cycle and resources are then used to ensure all pupils are engaged and confident learners. Pupils with SEND are monitored regularly and communication between pupils, parents, staff and external specialists underpins their success.

## **The role of governors**

Our governors determine, support, monitor and review the school's approach to teaching and learning. In particular they:

- support the use of appropriate teaching strategies by allocating resources effectively;
- ensure that the school buildings and premises are used optimally to support teaching and learning;
- check teaching methods in the light of health and safety regulations;
- seek to ensure that our staff development and our performance management
  - both promote good-quality teaching;
- monitor the effectiveness of the school's teaching and learning approaches
  - through the school's self-review processes, which include reports from the headteacher, senior leaders and subject leaders, and a review of the continuing professional development of staff.

## **Monitoring and review of this curriculum document**

Senior leaders monitor the school's curriculum planning and implementation so that we can take account of new initiatives, research or any changes in the curriculum. We will therefore review this policy every three years or sooner if required.

# Long Term Plan

## Teach Computing Curriculum overview

	Computing systems and networks	Creating media	Programming A	Data and information	Creating media	Programming B
Year 3	Connecting computers (3.1)	Stop-frame animation (3.2)	Sequencing sounds (3.3)	Branching databases (3.4)	Desktop publishing (3.5)	Events and actions in programs (3.6)
Year 4	The internet (4.1)	Audio production (4.2)	Repetition in shapes (4.3)	Data logging (4.4)	Photo editing (4.5)	Repetition in games (4.6)
Year 5	Systems and searching (5.1)	Video production (5.2)	Selection in physical computing (5.3)	Flat-file databases (5.4)	Introduction to vector graphics (5.5)	Selection in quizzes (5.6)
Year 6	Communication and collaboration (6.1)	Webpage creation (6.2)	Variables in games (6.3)	Introduction to spreadsheets (6.4)	3D modelling (6.5)	Sensing movement (6.6)

## Unit summaries

	Computing systems and networks	Creating media	Programming A	Data and information	Creating media	Programming B
Year 3	<p><b>Connecting computers</b></p> <p>Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks.</p>	<p><b>Stop-frame animation</b></p> <p>Capturing and editing digital still images to produce a stop-frame animation that tells a story.</p>	<p><b>Sequencing sounds</b></p> <p>Creating sequences in a block-based programming language to make music.</p>	<p><b>Branching databases</b></p> <p>Building and using branching databases to group objects using yes/no questions.</p>	<p><b>Desktop publishing</b></p> <p>Creating documents by modifying text, images, and page layouts for a specified purpose.</p>	<p><b>Events and actions in programs</b></p> <p>Writing algorithms and programs that use a range of events to trigger sequences of actions.</p>
Year 4	<p><b>The internet</b></p> <p>Recognising the internet as a network of networks including the WWW, and why we should evaluate online content.</p>	<p><b>Audio production</b></p> <p>Capturing and editing audio to produce a podcast, ensuring that copyright is considered.</p>	<p><b>Repetition in shapes</b></p> <p>Using a text-based programming language to explore count-controlled loops when drawing shapes.</p>	<p><b>Data logging</b></p> <p>Recognising how and why data is collected over time, before using data loggers to carry out an investigation.</p>	<p><b>Photo editing</b></p> <p>Manipulating digital images, and reflecting on the impact of changes and whether the required purpose is fulfilled.</p>	<p><b>Repetition in games</b></p> <p>Using a block-based programming language to explore count-controlled and infinite loops when creating a game.</p>

	Computing systems and networks	Creating media	Programming A	Data and information	Creating media	Programming B
Year 5	<p><b>Systems and searching</b> Recognising IT systems in the world and how some can enable searching on the internet.</p>	<p><b>Video production</b> Planning, capturing, and editing video to produce a short film.</p>	<p><b>Selection in physical computing</b> Exploring conditions and selection using a programmable microcontroller.</p>	<p><b>Flat-file databases</b> Using a database to order data and create charts to answer questions.</p>	<p><b>Introduction to vector graphics</b> Creating images in a drawing program by using layers and groups of objects.</p>	<p><b>Selection in quizzes</b> Exploring selection in programming to design and code an interactive quiz.</p>
Year 6	<p><b>Communication and collaboration</b> Exploring how data is transferred by working collaboratively online.</p>	<p><b>Webpage creation</b> Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation.</p>	<p><b>Variables in games</b> Exploring variables when designing and coding a game.</p>	<p><b>Introduction to spreadsheets</b> Answering questions by using spreadsheets to organise and calculate data.</p>	<p><b>3D modelling</b> Planning, developing, and evaluating 3D computer models of physical objects.</p>	<p><b>Sensing movement</b> Designing and coding a project that captures inputs from a physical device.</p>

# Curriculum Progression Map

