INTENT

Beaconside Primary School has adopted a computing programme, ICompute, that provides a rich, broad and balanced curriculum, fully mapped to the Primary National Curriculum for Computing, covering the following 3 strands:

- Computer Science
- Information Technology
- Digital Literacy (including E-Safety)

Our five school learning values are also developed and embedded through the Computing Curriculum.

Key curriculum drivers - resilience and inclusion are also considered within our provision as we aim to enhance pupils' enjoyment, understanding and attainment.

Every child can enjoy and succeed in Computing with all pupils being given the time and opportunity to fully understand, explore and apply skills in different ways, in different situations and different subjects. This enables pupils to fully grasp a concept and understand their learning. We ensure that the provision is equitable.

Learning is sequenced so that concepts are developed in logical steps with particular attention given to fundamental concepts. This helps ensure that all children can master concepts before moving onto the next stage, with no pupil left behind. This means acquiring a deep, long term secure and adaptable understanding of the subject. This takes time.

The computing curriculum is designed to build on prior learning throughout the primary phase for and to ensure progression where all learning builds towards clearly defined end points:

- end of unit
- end of year
- end of key stage.

Our Computing curriculum recognises the importance of and embeds and understanding of E-Safety and keeping children safe online. Three broad concepts: Contact, Conduct and Content are used to educate our pupils; to develop awareness of the risks posed by online and digital technologies and promote responsible use of these.

We aim to build computational thinking. We aim to develop modes of thinking familiar to computer scientists and software developers that can also be used when not using computers.

IMPLEMENTATION

What makes a good Computing Lesson?

Good practice in Computing is similar to that of subjects across the Primary curriculum.

Teachers will use a range of strategies in Computing lessons to promote effective learning and ensure progress and mastery:

- **Experimenting** – e.g. allowing pupils the opportunity to explore software to build their own mental model for how it works.
- **Making –** making things to show and share with others.
- **Discussion –** pupils can discuss different insights and experiences and share their ideas with one another.
- **Direct Instruction –** some complex ideas may require direct teaching in order to be effective.
- **Practise –** pupils are given opportunities for them to practise applying their skills, knowledge and understanding.

Good teaching is underpinned by excellent subject knowledge and in the development of pupils' understanding of important **concepts** and **approaches** within the lesson and over time. Pupils are enabled to see the connections between individual topics and the bigger picture.

Concepts

This involves teaching children to use methods of working, such as – logic, decomposition, patterns, abstraction (removing unnecessary detail) and evaluation.

Approaches

This involves teaching children skills to achieve an objective, such as – tinkering, creating, debugging, persevering, collaborating.

Pedagogy

Our approach to teaching computing utilises the theory of Cognitive Load, which focuses on the areas of short-term working memory and long-term memory. Whilst our long-term memory can be seen as essentially infinite, our working memory is extremely limited, with studies suggesting a processing capacity of between three and nine "information elements". This capacity can easily become overloaded, impacting on our ability to process the information that we're presented with.

As we learn from our experiences, new information is stored in our long-term memory for future recall. Over time, these elements of information are connected with existing understanding into collections of related knowledge or 'schemas'.

This is achieved through different teaching techniques such as:

- awareness of learners' prior experience and understanding to help predict where cognitive overload may occur
- breaking down the learning into suitable learning episodes to help manage cognitive load
- presenting only information relevant to the task in a unified way
- presenting information both visually and orally as appropriate, without adding additional load
- use worked examples to provide scaffolding for novices
- use collaborative techniques such as pair programming, which distribute the cognitive load amongst learners.

Assessment of learning by the teacher enables pupils' progress to be monitored and the criteria used is based on the Progression Pathways Framework designed by Computing at Schools (CAS) and the BCS (the Chartered Institute for IT) – groups responsible for the drafting of the National Curriculum for Computing of behalf of the DfE. End of unit and termly assessment data allows the subject leader and teachers to see where pupils are in their learning, identify gaps in coverage, knowledge, understanding and skills and to inform the curriculum with future teaching.

IMPACT

The intended impact of our curriculum is that by the end of each year, the vast majority of our pupils have sustained mastery of the content, that is they remember it all and are fluent in applying it. Some pupils will have a greater depth of understanding.

We intend that our Computing Curriculum facilitates the movement of new ideas and information from working memory into conceptually sound schemas.

By the end of each Key Stage, the large majority of pupils will be meeting National Curriculum attainment targets.