Subject –Computing:

School Vision and motto:

'Making Learning an Adventure'

At Holywell Village First School we have high aspirations for our children to become well-rounded and responsible future citizens. They are happy, independent and have positive self-esteem. Our children have a thirst for learning. They are curious about the world around them and are confident to 'have a go'. They are reflective learners who persevere and demonstrate good communication and social skills. They are thoughtful, caring and kind.

'We want our children to be the best they can be.'

Computing Curriculum Intent

Why do we teach Computing?

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. 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, 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.
 (Computing key stages 1 and 2 National curriculum in England).

Our curriculum is unique to HVFS

We believe that computing lessons should be fully inclusive of every child and reduce inequalities. Our intent is to: fulfil the requirements of the National Curriculum for Computing but also:

- Teach children how to be 'Computational Thinkers' to effectively and safely participate in this digital world. (CITIZENSHIP)

- Equip pupils to use creativity to understand and change the world. (CITIZENSHIP)
- Make meaningful and concrete links with other subjects, e.g. Mathematics, Science and STEM subjects. (CHALLENGE)
- Provide children with the appropriate declarative and procedural knowledge so they have a secure understanding of both natural and artificial systems. CONFIDENCE
- To ensure the curriculum has the required impact to challenge the existing gender imbalance within society. (CITIZENSHIP)
- Equip children with the skills to protect themselves from the adverse consequences of encountering inappropriate digital content. (CONFIDENCE)

We want our pupils to be creators not consumers and our broad curriculum encompassing computer science, information technology and digital literacy reflects this. We want our pupils to understand that there is always a choice with using technology and as a school we utilise technology to model positive use. We recognise that the best prevention for a lot of issues we currently see with technology/social media is through education. Building our knowledge in this subject will allow pupils to effectively demonstrate their learning through creative use of technology. We recognise that technology can allow pupils to share their learning in creative ways. We also understand the accessibility opportunities technology can provide for our pupils. Our knowledge rich curriculum has to be balanced with the opportunity for pupils to apply their knowledge creatively which will in turn help our pupils become skilful computer scientists.

Implementation

How do we teach Computing?

Our Computing curriculum and lessons are effective and age appropriate. We implement Computing in the following ways:

Computing is taught in three strands- Computer Science, Information Technology and Digital Literacy. These are all interconnected, rather than separate entities within the curriculum. They can be taught using devices or as an unplugged activity.

Pupils are introduced to a wide range to technology, including laptops, programmable toys, iPads and interactive flat panels, allowing them to continually practice and improve their skills. This ensures they become digitally literate so they are able to express themselves and develop their ideas through information and computer technology- at a level suitable for the future workplace and as active participants in a digital world. This all starts with the root learning and exploration in EYFS.

There is a progression of skills across the year groups, ensuring children learn new skills every year and develop previously taught skills.

 We teach a curriculum that enables children to become effective users of technology who can:

- Understand and apply the essential principals and concepts of Computer Science, including logics, algorithms and data representation.
- Analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve problems.
- Evaluate and apply information technology analytically to solve problems.

- Communicate ideas well by utilising appliances and devices throughout all areas of the curriculum.
- Each year group participates in learning about E Safety. This gives children the procedural skills to stay safe online.

In EYFS children are taught the early skills of computational thinking, to break down problems into smaller parts (decompose). They are introduced to technology and programmable toys. During lessons, they can explore, create, develop, analyse and begin to scaffold their learning.

In key stage 1, children are taught what algorithms are, how to program with precise and unambiguous instructions. Children can 'debug' a set of instructions and understand how to be successful. They can predict what will happen after inputting the instructions.

Block based programming in introduced to younger pupils which focuses on teaching coding using visual methods. This visual representation of programming is a powerful learning tool to show how different elements of coding work together.

All children are taught how to navigate School360, where they can create, store, manipulate and retrieve digital content. They use Google Classroom to enhance their learning.

Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.

During E Safety lessons children are taught how to keep personal information safe and private, understand where to go for help and support if they have any concerns about digital content or online behaviour.

In key stage 2, children will be taught how to design, write and implement their own programs, decompose the problems into smaller parts. They will use sequence, selection and repetition in programs, progressing to working with variables and data values.

Children will be taught the importance of key people in computing history and the evolution of communication. To understand how computer networks have progressed historically and how they can provide a service .e.g. World Wide Web and the internet.

During E Safety children are taught how to be respectful, and responsible: recognise acceptable and unacceptable behaviour: identify a variety of ways to report concerns about content and contact.

We have an inclusive approach to computing: all children are included in all sessions and taught the same computational skills. Lower ability children are supported during lessons.

The computing curriculum is designed so that depth can be achieved. This allows for lots of opportunities for skills to be used to master the curriculum.

Vocabulary

Computing is a vocabulary rich subject. In each medium term plan, teachers plan vocabulary development. This ensures children have the key empowering knowledge and language required to access a full range of digital programs and devices.

Pupils are taught the specific meaning of technical terms to enable them to become digitally literate.

Teachers will use key vocabulary and specific terminology to enable children to have a greater understanding.

Staff will be taught specific terminology through effective CPD sessions and discussions with the computing lead.

Our Computing lessons have the following structure:

Warm up
Vocabulary is introduced and is appropriate to the age and year group taught. Warm ups are intended to enhance the understanding of the lesson as this can be a barrier to a successful lesson.

Main Content
Our teaching approach will always acknowledge that in computing, many aspects will have a high intrinsic load meaning that there is a lot to think about. Most pupils should be treated as novices, breaking down the knowledge into sufficiently small steps-even for high attainers.
In order to develop the children's knowledge and develop digital skills, they are given clear directions, instructions. They apply their skills during the main teaching session with clear feedback from the teacher.

Effective teaching is ensured through teachers using well-structured explanations, lessons which are modelled and understanding is checked by using multiple choice questions.

Physical computing is an educational context for teaching computer science by using hardware and software to create tangible constructs. Using simple inputs, physical computing takes data from the physical world and manipulates it digitally to create outputs.

The unplugged approach allows learners to access computing concepts without the use of a computer, making lessons engaging and accessible to a variety of learners. It demonstrates that computer science is not about using computers, but exploring its fundamental concepts.

Plenary

Pupils are asked to evaluate their own success against the lesson objectives, then measure progress at the end of the lesson, by completing a skills passport. This is then used for teacher information and future planning.

Computing opportunities beyond the National Curriculum:

At Holywell Village First School – Cultural capital

- We enhance children's experiences and learning by utilising different opportunities in our computing curriculum across the whole curriculum and around school.

- We provide engaging computer lessons weekly for every child in which we include various experiences (Simulations) to develop their skills to prepare them for the real world. We aim to foster children's curiosity and fascination with technology so that this thirst for knowledge remains with them for the rest of their lives.

- We give children as many opportunities as possible to experience, explore and explain the wide variety of technology in the world in order for them to become informed and thoughtful members of the digital community.

- We give girls the opportunity to develop their aspirations to become computer scientists of the future, as women and girls remain greatly underrepresented in science, technology, engineering, and mathematics (STEM) fields, especially computer science

Impact

We encourage our children to enjoy and value the curriculum we deliver. We will constantly ask the WHY behind their learning and not just the HOW. We want learners to discuss, reflect and appreciate the impact computing has on their learning, development and wellbeing.

Finding the right balance with technology is key to an effective education and a healthy life-style. We feel the way we implement computing helps children realise the need for the right balance and one they can continue to build on in their next stage of education and beyond.

Progress is assessed after each unit to determine whether children demonstrate emerging, expected or exceeding skills and data is collected by the Computing coordinator for analysis in the form of a 'Best Fit Grid'.

Lesson observations are conducted by the computing subject leader using a peer mentoring approach. The Best Fit learning grids are collected termly so children's achievement and coverage may be monitored.

We celebrate all achievement in our celebration assemblies, school website and on our social media.

Sandra Hogarth

Computing Subject leader

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