

Computing Curriculum Rationale



CORNFIELD SCHOOL

LEARNING FOR LIFE

INTENT



Alignment to National Curriculum

At Cornfield we follow the Computing national curriculum as a basis for its content. It has been designed to enable pupils to become computational thinkers when programming and creative users of information technology. We teach programming using the six areas of computational thinking which are algorithms, decomposition, patterns, logic, abstraction and evaluation. We also aim to ensure that all pupils become digitally literate and can use technology safely, respectfully and responsibly. This builds on foundations from KS2 to KS4.

By the end of KS2 pupils will be more independent in their use of technology and will conduct themselves safely and responsibly.

By the end of KS3 pupils will be able to use the knowledge and skills acquired throughout this stage to produce digital content and create programs in the three areas of computing, information and technology and digital literacy all without support.

By the end of KS4 Students are well prepared for their post-16 pathways and can continue to implement their skills in life or if they choose a computing course at college.

The computing curriculum is logically sequenced to build on knowledge learnt from previous topics studied in each year group. This is a spiral curriculum and as such has been carefully arranged to provide progression at each stage. Each topic relates to one of the computing key concepts and follows on to build skills and knowledge. A unit of work will begin by exploring pupil's prior knowledge, either that learnt in previous year groups or that already acquired in life situations.

Computing aims to equip all students with the necessary skills, subject specific vocabulary, and cultural capital to be successful, regardless of starting points. We also aim to provide an accessible curriculum which takes into account the digital divide. We recognise that students come to our school with wide and differing amounts of Computing (knowledge, experiences, skills and attitudes). There have been studies through the Raspberry Pi Foundation that show learning through Storytelling, Pair Programming, Peer Instruction and The PRIMM Approach (Predict, Run, Investigate, Modify and Make)



End Points



Sequencing



Addressing Social Disadvantage

IMPLEMENTATION



Pedagogical Approaches

The knowledge required in computing takes place through a range of approaches and our learners experience this knowledge through active and Student-centred learning tasks. Some activities begin with teacher that provide instructions. Immediate feedback is given to provide positive reinforcement for learners as they achieve each level. Learners working through the levels of the activity are building their knowledge through experience. Another approach used is the PRIMM Approach in programming, the children may be asked to predict, run or investigate teachers code before then being asked to modify a program and then onto designing and making their own.



Promoting Discussion and Understanding

To develop understanding in computing, many concepts are first taught through Think pair share or Student-centred learning activities. This leads to conversations and discussions about how computers actually work or what the code is actually doing in the program. Through these type of activities, key vocabulary, and core knowledge, is mastered. Children also use paired programming, in which two programmers work together at one workstation. One, the driver, writes the code while the other, the navigator, reviews each line of code as it is typed in. This promotes discussion and understanding when working in pairs.



Knowing More and Remembering More

The first lesson for each unit of work is used to review the ideas mastered in previous units or to find out what the children already know about the area being taught. Opportunities for retrieval practice are included in computing lessons to ensure knowledge is transferred into long-term memory. Retrieval activities may require children to remember learning from the previous lesson, previous topic or even previous year.



Teacher Assessment

Formative assessment is used to implement the computing curriculum. This is achieved through observations, quizzes, self and peer assessments using success criteria to assess a final project. The teacher plans opportunities in the lesson to check that pupils understand, can do the task, can problem solve, can predict and can explain using the key vocabulary. Students are constantly given verb feedback and the opportunity to act on it to improve their work.

IMPACT



Approach to Assessment

Throughout and at the end of a lesson, children are asked to evaluate and recognise their own success against the learning outcome. After the unit, children carry out an accurate self-and/or peer assessment on the work they have produced against the set criteria. The teacher tracks whether children are working towards, meeting or exceeding what is thought to be the national standard for that unit of work in a tracker. Practical skills and other disciplinary knowledge concepts are also assessed during project work.



Progress Data

Data is collected throughout the units of work and tracks achievement in computing to ensure children are on target for national expectation at the end of each Key Stage . A range of children's work is uploaded to be viewed through the EarWig system. Teachers will share the level of progress with parents and careers on a regular basis. Evidence is based on the learning they see in class and the evidence in students' books or online records.



Students' Work

Pupils' work is saved in a variety of ways depending on the activity. Children have individual and shared areas on the school network. Work is also uploaded to Microsoft Sharepoint. This not only provides the teacher with evidence for assessment, but also gives the teacher the opportunity to use children's work to demonstrate, model or modify, to develop understanding. Children also save work on platforms like Scratch. All this, helps the child to make links from prior to new learning by looking back at previous work. Work is monitored by the subject leader to ensure there is sequence, progression and greater independence by higher year groups.



Feedback to Students

The computing subject leader has discussions with pupils about their learning as it progresses. This forms part of the monitoring process. Children's work and their self-evaluation and assessments which guide these discussions, to ensure the teacher knows to what depth the new knowledge and skills have been learnt. Continual verbal feedback and discussion is given to understand if knowledge is transferred to the long-term memory, which informs future planning.