Curriculum Intent and Implementation

Computer Science Department Intent

A high-quality computing education prepares pupils to comprehend and alter the world through computational thinking and creativity; equipping them to become active citizens in our increasingly digital world and inspire the next generation of computer scientists who can shape future technological advances. Computing has strong ties to mathematics, physics, design, and technology, and it can help us understand both natural and artificial systems. Computational thinking is at the heart of computing; it teaches students problem solving skills and encourages a resilient and innovative growth mindset amongst our learners.

Our computing curriculum ensures all pupils are competent, confident and creative users of information and communication technology. Through our pupils' exposure to a wide variety of software applications, they are able to explore fundamental principles of computer science - including logic, algorithms and data representation, and use technologies analytically to solve problems. Pupils learn about how technology is embedded into our modern lifestyles and the impact, both positive and negative, that technology has on our society and how they can use technology in a legal, moral and ethical way and in keeping with our gospel values.

Daily/weekly review:

The majority of computer science lessons begin with a 'Do It Now' task which focuses on retrieval tasks to recall content from previous lessons, or which asks the pupils to think about the topic they will cover in the current lesson, which is often reviewed at the end of the lesson. Many of the DIN tasks involve the use of the whiteboards, which are held up to reveal the pupils' answer. In this way, the teacher can quickly ascertain the level of pupil understanding.

Google Classroom is widely used within lessons, with pupils regularly handing in their digital work using this platform, which enables the teacher to review classwork regularly. Within lessons, immediate verbal feedback is regularly given, allowing pupils to improve or correct their work within the lesson. Our home learning programme includes activities based on retrieval practice and consolidation of learning.

At KS4 and KS5 past paper questions are used frequently to allow students to review and apply their knowledge and improve their examination technique. After completion, mark schemes are shared with pupils for them to improve their answers using either a purple pen (when using printed exam questions) or a different coloured font (when completing the questions digitally).

Modelling:

Teachers regularly model how to use a variety of software tools and features prior to pupils attempting to demonstrate those skills themselves. When introducing new content, teachers model how to complete tasks on the whiteboard or TV monitor, or demonstrate using a WAGOLL (What A Good One Looks Like) template.

When attempting exam-style questions, the teacher will demonstrate how to approach and complete this style of question prior to pupils attempting the same or a similar question. Pupils' work is showcased to other pupils to show them what can be achieved or what is expected of them. Pupils are asked to come to the front of the room to show the class how they attempted a task or a question using the main whiteboard or by loading their work on the teacher's screen.

The visualiser is used to model how to complete written exam questions and how to create visualisation diagrams (e.g. the layout of a webpage).

Explanation and reading:

Key vocabulary is regularly formatted in a way to make it stand out from the rest of the text on presentation slides (e.g**. bold, red** font) and the glossaries, available on the department website, define all key terminology for each unit. Text included on presentations is quality-checked to minimise errors and to ensure a professional standard.

When the teacher reads information from presentations it is done in a clear manner with an emphasis on the key vocabulary, and pupils are encouraged to do the same. Care is taken to ensure instructions on worksheets are accurate and worded appropriately for the target audience, including some resources specifically created to support certain classes. During question and answer sessions, pupils are encouraged to refine their answers, using relevant key vocabulary.

Deliberate Practice:

Once the application of software tools and features has been modelled, pupils use the software within lessons to ensure deliberate practice. After using the skills we have taught them, they are often given a range of tasks and challenges to complete to hone their skills and develop their understanding. Many lessons include explorer tasks, where pupils are given the opportunity to stretch their skills in an independent fashion, as this is at the heart of becoming a competent user of information technology tools.

Sometimes pupils work in pairs to tackle challenging tasks like writing programs in the GCSE and A Level courses. The use of home learning booklets in the Cambridge Nationals KS4 subject gives pupils the opportunity to practice exam-style questions in their own time, with the provision of a revision book to guide them through the topics. GCSE and A Level students are given a range of exam questions to answer as they work through the syllabus.