Computer Science: Curriculum Statement

Intent

The aim in computer science is two-fold: to inspire pupils – as pioneers of the future; and to nurture a love of the subject. As computer programs pervade every aspect of our lives, our society needs computer scientists – passionate individuals to develop computer science in every type of industry.

In practice, this means that pupils need to see the wider picture, and to relate their learning to the real world and possible career paths. They need to become digitally literate, and digitally resilient. The CS department will aim to achieve this by teaching them to understand and apply the fundamental principles and concepts of computer science. Pupils will acquire this knowledge by learning key facts and words, by analysing problems in computational terms, and through repeated practical experience of writing computer programs in order to solve problems. Pupils will thus learn to evaluate and apply information technology (including unfamiliar technologies) and will become competent and creative users of it – in both home and work contexts.

Implementation

Curriculum and Scheme of Work

The scheme of work for all year groups is reviewed annually, involving all teachers of the subject to ensure suitability, quality and compliance with statutory requirements of the National Curriculum. Schemes of work are held on the Central Resource Library (CRL) and the Microsoft Teams page for each year group, and can be accessed by any member of the department. Pupils have visibility of the Learning Journey, which is a visual representation of the scheme of work (see page 6).

At Key Stage 3, pupils will be introduced to:

- **how computers work**
- **programming**
- **computational thinking**
- **spreadsheets**
- **databases**
- **networks**
- **cyber security**
- **implications of digital systems**
- **legal, ethical and environmental issues**

The KS3 curriculum has been designed to ensure pupils develop key ICT skills, computational thinking skills and have a solid baseline knowledge for GCSE.

At Key Stage 4, computer science pupils will:

- **Understand more deeply fundamental computer science concepts, e.g. abstraction, decomposition, logic, algorithms, and data representation;**
- **Analyse problems in computational terms by practically solving such problems, including designing, writing and debugging programs;**
- **Learn to think creatively, innovatively, analytically, logically and critically understand the components that make up digital systems; and will**
- **Understand the impacts of digital technology to the individual and to wider society, and apply mathematical skills relevant to computer science.**

The KS4 scheme of work is developed to prepare pupils for the OCR J277 examination

To ensure long-term retention of knowledge, the CS department revisit prior learning by implementing a spiral curriculum, thus ensuring that they constantly build upon previous knowledge. The department uses responsive teaching, questioning, knowledge-based assessments, deliberate and guided practice to check pupil understanding. Resources are selected to support, assess, develop and consolidate knowledge and skills to facilitate progression.

To inspire a passion through activities out of the classroom, the CS department aims to implement physical computing, real world scenarios and discuss future career opportunities. They promote reading around computing through class discussion and, in particular whilst teaching emerging technologies and the history of computing.

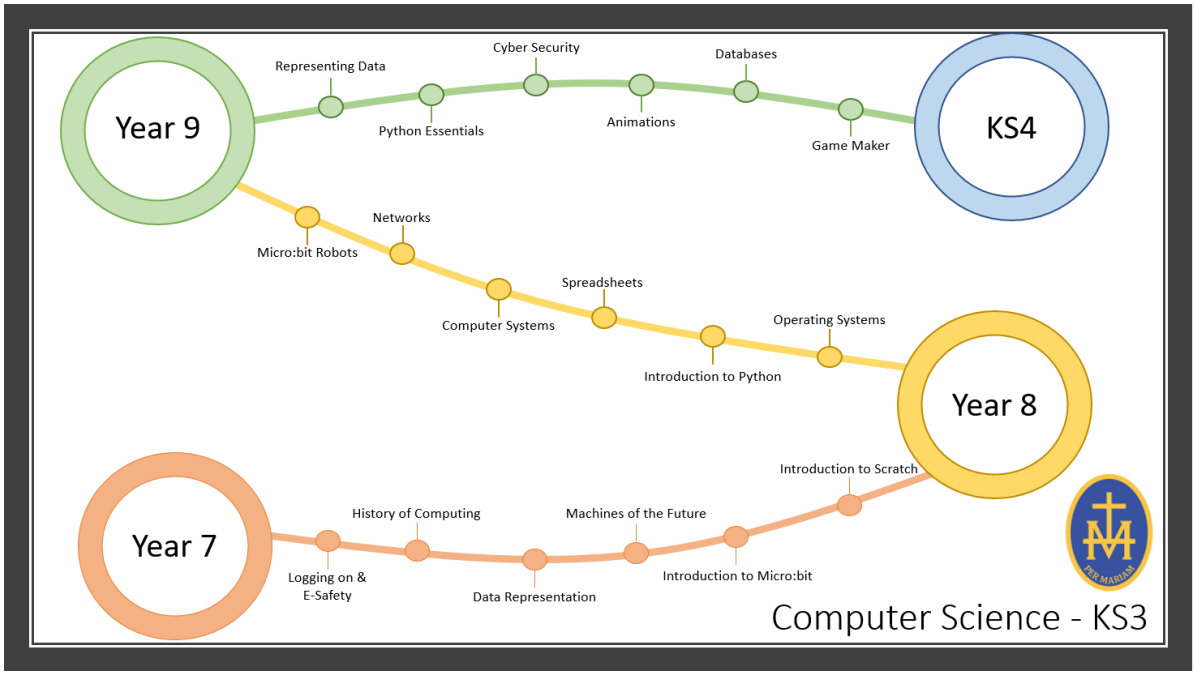
Impact

Pupils will show progress in tracking, formal / informal assessments of facts / keywords, and end-of-unit tests. Assessed real-life practical tasks' outcomes will be used responsively to ensure progress. Their progress, and our reviews, determine how well we have achieved our intent.

Data from all assessments is recorded and frequently reviewed both by individual teachers and collectively as a department, to enable timely and appropriate interventions. All KS4 results are included in the CS DDP.

Learning Journeys

KS3



KS4