GCSE Computer Science Learning Journey

Intent

At S.Peter' Collegiate school, we aim to prepare our learners for their future by giving them the opportunities to gain knowledge and develop skills that will equip them for an ever changing digital world. Knowledge and understanding of Computing is of increasing importance for children's future both at home and for employment. Our Computing curriculum focuses on a progression of skills in digital literacy, computer science, information technology and online safety to ensure that children become competent in safely using, as well as understanding, technology. These strands are revisited repeatedly through a range of topics during a student's time in school to ensure the learning is embedded and skills are successfully developed. Learners will have the opportunity to gain an understanding of computational systems of all kinds, whether or not they include computers. Our intention is that Computing also supports children's creativity and cross curricular learning to engage children and enrich their experiences in school.

Implementation

Students are taught Computing under three strands, *Theoretical* - Students will understand a range of number systems such as binary, denary and hexadecimal. They will understand how to convert between binary and denary, as well as hexadecimal and binary. Students will understand how to perform simple operations such as binary addition. Students will understand that data such as numbers, characters, images and sound can be represented in binary on a computer. Students will understand simple logic gates (AND, OR, NOT) in circuits, use truth tables and be able to write a logic statement for a given problem. *Problem Solving* - Students must understand standard algorithms for sorting (bubble sort, merge sort) and searching (linear search, binary search). Students will use logical reasoning to compare the efficiency of different algorithms for the same problem. *Programming* - Students are expected to be familiar with, and understand how to use a range of data types (string, integer, float, Boolean) and data structures (string, array). Students will understand the purpose of programming constructs such as sequence, selection (decisions) and iteration (repeat). Students will understand how to use Boolean operators (AND, OR, NOT) in programming. Opportunities will be given where students can use more than one, text-based, programming language to explore simple computational abstractions that model real-world problems and physical systems. This will include solving a range of computational challenges that is fully working and meet user requirements. Students will understand the purpose of procedures and/or functions and use it in programming. Students will understand the environmental, ethical and legal impact of technology. At S.Peters' Collegiate School, we give children access to a wide range of good quality resources and provide cross curricular opportunities for children to apply their Computing knowledge and skills.

Impact

Our curriculum hopes that all pupils will be provided with the best quality delivery and assessment available at all times. Pupils will be fully engaged in challenging activities that require problem solving, use of initiative, creativity and a good understanding of the skills and knowledge relating to the context of the subject. Any pupil that is driven to succeed will progress and gain the highest grades available.