COMPUTING - BIG PICTURE CURRICULUM PLANNING - KEY STAGE 3

The big aims of KS3	● To enable the scientific and practical study of computation: what can be computed, how to compute it, and how programs can be written to solve problems ● To develop student understanding about how computers and telecommunications equipment work, including storage, retrieval, transmission and manipulation of different forms of data ● To develop in students the ability to be efficient and critical users of technology ● To develop understanding about the risks associated with the use of technology and how to keep themselves/others safe ● To develop and extend students' subject/technical vocabulary ● To develop students' technical understanding and competence so that they are able to create a range of digital artefacts which are fit for audience and purpose. Additionally, to select, use, manipulate and evaluate software and systems. ● To inspire more girls to study computing at KS4 and consider this as a career route
Characteristics of a compelling learning experience	● Promotes learner curiosity, enjoyment, creativity, autonomy and resilience ● Provides engagement with 'real-world' audiences and problems ● Harnesses technology to develop collaborative work ● Engages learners with relevant, high-quality competitions, trips and speakers ● Fosters growth-mindset in learners ● Provides opps. to develop successful habits for learning, ie. 'My FPHS'
Key concepts	● **AB - abstraction -** the process of removing unnecessary detail from a problem in order to solve it ● **DE - decomposition -** the breaking down of problems into smaller parts ● **AL - algorithmic thinking -** the logical sequencing of steps to solve a problem ● **EV - evaluation -** judging outcomes to determine whether a solution/digital artefact is efficient, fit for purpose and audience ● **GE - generalisation -** recognising similarities and patterns in solutions in order to solve similar problems

Key knowledge	● Computational thinking methods: Decomposition (breaking down), Abstraction (removing unnecessary detail), Pattern Recognition (spotting/ using similarities) and Algorithmic Thinking (making steps & rules and representing these) ● Key constructs of programming; sequence, selection, iteration ● Programming language syntax (graphical - eg.Scratch/blockly and text based eg.Python) ● Boolean logic (AND OR and NOT) and how to present this ● Data types, data representation and Binary/Hex ● Features and purpose of a variety of software; graphics, modelling, online communications, programming, video/sound editing ● Digital literacy, computer legislation and ethics ● Collaborative working methods (ie. Google docs/drive/sharing) ● Features and purpose of different types of computer hardware and software ● Risks of technology (dangerous content/contact/conduct) for self, peers, others in digital spaces/communities, how to manage risk and report concerns, ● Features and benefits of a positive online profile/digital footprint ● The systems life-cycle 'way of working' (eg. analysis/design/implementation/testing/evaluation)
Key skills	● Debugging ● Programming ● Applying boolean logic ● Applying computational thinking methods to design algorithms and solve problems ● Analysing and predicting ● Information handling: finding, creating, judging, manipulating data and information ● Applying the systems life cycle to any given computing/IT problem ● Technical proficiency