



Computing Curriculum Intent statement

“Everybody in this country should learn how to program a computer... because it teaches you how to think.” - Steve Jobs

“The computer was born to solve problems that did not exist before.” – Bill Gates

Intent

In 2014 the National Curriculum for Computing emerged and created a new pathway to how ICT would be presented in schools. At Brookfield School we aim to provide students with the skills and understanding to prepare for a rapidly changing world through challenging and engaging topics. Students will understand the varying progression pathways in Computing from the traditional uses of ICT to Programming and Algorithms.

Computing skills enable students to be strong thinkers and independent learners. Topics allow for learners to be creative, and by the time they leave Brookfield School we ensure that students will leave with a competency to embrace technology in an ever changing technological world.

The national curriculum for computing aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology

Computing can be taught cross curricular and aspects of the ICT part of the Computing Pathway can be taught as part of other subjects. However the discreet skills learnt in the whole Computing pathway will form the basis of each students assessment and levels.

Implementation

Computing at Brookfield School is split across two sites. One site following a nurture KS3 model and the other being KS4 exam preparation and completion. In Year 7 we will be looking at filling in the gaps of knowledge and understanding of Computing that the students may not have been taught at their previous school and placements. In recent years we have found that an ICT understanding is there through the use of tablets (iPads) being taught in Primary School, but lacking in understanding of Office packages and Computing terminology. To aid in filling in these gaps, all students will take a baseline assessment in computing to assess current ability and understanding. This will enable students to work towards their target level and above, and any future intervention needed can be set up and implemented.

The levels will therefore follow both Primary and KS3 to ensure that skills in Computing and ICT knowledge are embedded and can be built upon over the students time at Brookfield School.

These levels will follow the National Curriculum for each key stage and implemented using the Computing Progression Pathways:

KS3 levels will be incorporated across Years 7 to 9 to further progress students who have gained knowledge of Computing in previous school placement(s) and stretch understanding from those that haven't.

At Key stage 3 - Pupils should be taught to:

Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems

Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem

Use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions

Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]

Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems

Understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits

Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users

Create, reuse, revise and repurpose digital artifacts for a given audience, with attention to trustworthiness, design and usability

Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns

In KS4 students will be given the opportunity to achieve a Level 1 / Level 2 qualification in ICT. This will allow students to progress to higher levels of study or to a professional career using ICT.

At Key stage 4 - All pupils should be taught to:

Develop their capability, creativity and knowledge in computer science, digital media and information technology

Develop and apply their analytic, problem-solving, design, and computational thinking skills

Understand how changes in technology affect safety, including new ways to protect their online privacy and identity, and how to report a range of concerns

Currently the target in KS4 is that students take the Pearson Edexcel Functional Skills exams, gaining a Level 1 Qualification in Year 10 and having the opportunity to gain a Level 2 Qualification in Year 11.

Each topic taught throughout KS3 and KS4 will bring about and promote discussion and questioning about the subject matter. This will ensure that students understanding is shown, identify any misconceptions, and provide clear direct feedback.

Impact

The impact will be measured and monitored in the following ways:

To have gained knowledge and skills in Computing that will enable them to gain a suitable qualification.

There is clear progress in their work and knowledge over time (evidenced through baseline tracker and then knowledge gained over the year) and will be shown termly on the progress tracker.

Engagement and enjoyment of Computing.

Feedback from teachers to be supportive to correct misconceptions and challenge students further.

SLT can observe high quality Computing lessons and can see this through book scrutiny too.