

Curriculum Ambition Statement – Computing

At Downlands, we aim to provide an ambitious and challenging computing curriculum that inspires and motivates students to use computer systems to problem solve and create solutions for an ever-changing digital world.

Computing skills are interwoven throughout our pupils' lives and are vitally important for successful learning, employment opportunities and for personal development and mental well-being. Our curriculum focuses on the three strands of computer science, information technology and digital literacy and are linked within the schemes of work to provide a progressive journey that engages pupils' interests, inspires them to be inquisitive, gives them the confidence to be problem solvers and to support them in cross-curricular study.

Our curriculum reflects the school vision which is to inspire and challenge all to achieve without limits, each lesson is sequenced so that it builds on the learning from the previous lesson, and where appropriate, adaptive learning techniques are employed so that all pupils can succeed and thrive.

Key Stage 3

Not all pupils arrive at Downlands with the same experience from Key stage 2, the KS3 curriculum begins with an Introduction to ICT and Computing to ensure all pupils achieve a similar level irrespective of their KS2 experience. This unit introduces pupils to the essential tools and skills required to work remotely and independently at Downlands, across all subjects. The skills gained in this first unit are embedded throughout the key stage and become a consistent part of a pupil's way of working.

Over the Key Stage pupils are taught the fundamental principles of Computer Science and how these can be applied. This begins by pupils being introduced to programming concepts and how they can create solutions to problems. They start by using block-based programming to establish the foundations of understanding, this then develops into text-based programming using the Python programming language. Pupils continue to develop their programming skills throughout Key stage 3 by investigate how to develop solutions to problems and how to approach problems using a computational thinking approach. They are strongly encouraged to be innovative and curious, and to discover their own methods to solve problems. Pupils then investigate how data is represented and stored in a computer system, and how computer networks enabled collaborative working across the world, they are able to apply this to the real-world devices they use and to consider the suitability of devices to specific situations. This strand of learning culminates with the investigation and development of an app-based solution in Year 9.

Throughout Key Stage 3 pupils study the principles of Information Technology. Technology surrounds them and it is vital they are able to understand how to use the tools available to them productively and effectively. They begin by investigating the hardware and software used in

modern computer systems, pupils consider the specifications of devices and how this relates to the way they are used. Pupils investigate hardware uses beyond their own needs by looking at how computer systems can be used by those with physical disabilities. Practical Information Technology skills are developed by using a wide range of software tools, enabling pupils to use software creatively and to encourage and develop their own independent discovery of techniques and tools. Pupils begin by studying the basics of image manipulation software using both vector and bitmap graphics, this leads into the study of digital animation and continues through to Year 9 with the investigation of video and sound editing, advanced image manipulation skills and finally, the development of digital resources used to advertise and promote a festival. Throughout the whole Key Stage pupils are taught to use search skills effectively and how to store and organise their files effectively.

Alongside the learning of Computer Science and Information Technology, pupils are also taught the importance of Digital Literacy and how to use technology safely. Many pupils are more comfortable with a digital life than their parents but aren't necessarily aware of the dangers that this exposes them to. From the start of Year 7 there is a focus on E-Safety and pupils are taught of the need to keep their personal information private, how to treat others online with respect and what to do if things go wrong online. This leads to pupils investigating their legal and ethical responsibilities such as observing copyright and intellectual property rights and how their online behaviour could reflect both positively and negatively on them.

Key Stage 4

The Key Stage 3 curriculum is designed to fully support a pupil's progression to Key Stage 4 and to provide a grounding in the fundamental concepts required by the two available options of Computer Science GCSE and Cambridge Nationals iMedia.

The Computer Science GCSE enables pupils to delve deeper into understanding the principles and concepts of Computer Science and to understand the impacts of digital technology to society and to individuals, and to investigate the cultural, ethical and environmental impacts of technology. Pupils are able to analyse problems in computational terms and to design, program, evaluate and refine solutions to problems.

The Cambridge Nationals iMedia qualification enables pupils to develop a wide range of media and IT skills relevant to today's world including media production, graphic design and website development.

The skills and knowledge gained in Key Stage 4 will allow pupils to progress to a range of courses at Key Stage 5, most obviously those courses in Computing and Media, but the wider skills of critical thinking, problem solving and creativity learned in Key Stage 4 apply themselves effectively to all subjects at this next level.

Within our curriculum it is recognised that not all pupils will have access to the same amount or level of technology. To ensure pupils are not disadvantaged and to maximise the opportunity for them to be able to continue their work outside of the classroom, curriculum software is carefully chosen to be free and available for download at home.

At Downlands, pupils are provided with a wide range of digital devices and software resources to apply their computing skill across other subjects and for their own interest. This enables pupils to experience hardware and software that they may not normally have access to such as graphic tablets for image manipulation.

To enable pupils to develop their learning beyond the classroom, extra-curricular opportunities such as Computing Club, iDEA badges and national coding competitions are available to pupils. We also wish to address the gender imbalance within the computing industry by encouraging greater numbers of female pupils to choose the Computer Science GCSE. To achieve this we are intending to run a Girls Who Code club.