

## **Subject: Computing and IT**

### **Curriculum Principles**

At Dixons Newall Green Academy, we believe that Computing, Digital Literacy and IT are crucial to supporting students to understand the ever changing digital environment we live and work in.

At KS3 Students will be taught the basic, fundamental principles in computer systems allowing them to build and develop their knowledge and understanding. They will be able to 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. They will understand several key algorithms that reflect computational thinking. Students will use two or more programming languages, at least one of which is textual, to solve a variety of computational problems. They will learn how computers communicate internally and globally.

**Our unifying sentence is: “The Computing department, through their love for IT & Computing, empowered students with the knowledge and skills to prepare themselves for anything”.**

**In order to achieve a true understanding of computing, topics have been intelligently sequenced based on the following rationale:**

. Students are inspired by the technology that exists around them and through high quality inspirational teaching that fosters a curiosity in them to deepen their knowledge and understanding of IT technology even further. Students work passionately, show resilience and make improvements to further develop their work. They are set challenging work and exposed to a range of exciting career opportunities that demonstrate the real world impact of technology. By sharing these career opportunities in a high challenge context students are able to apply their classroom learning to future ambitions, sparking a genuine interest in the subject and seeing how their skills can shape their own futures and contribute to the wider society.

**The computing curriculum is inclusive of all students no matter their circumstances, social setting, cultural or religious beliefs, gender, sex or race.**

- Within the computing curriculum, examples are used that are inclusive of individuals of all different backgrounds and genders. This ensures that all students have a sense of belonging within the subject. Career spotlights show the diversity of careers available in computing, highlighting a diverse range of positive role models for students.

**We fully believe Computing can contribute to the personal development of students at DNG:**

- Students will assess the application of creative media skills through their practical use. Students will build and develop essential knowledge, transferable skills and tools to improve their learning in other subjects with the aims of enhancing their employability when they leave education, contributing to their personal development and future economic well-being. The qualifications will encourage independence, creativity and awareness of the digital media and computing industries.
- Students will develop transferable skills such as research, planning, and review, working with others and communicating creative concepts effectively. Through the use of these skills, learners will ultimately be creating fit-for-purpose creative media products used in the digital world.
- Students will build a ‘hands on’ approach to learning and developing.
- In computing students will learn how to write code through an understanding that making mistakes is vital for our development and mistakes in code teach us different ways to solve the same problem. The computing curriculum requires resilience, especially in topics such as Scratch and Python at KS3.

## Curriculum Overview

All children are entitled to a curriculum and to the powerful knowledge that will open doors and maximise their life chances. Below is a high-level overview of the critical knowledge children will learn in this subject, at Key Stage 3, to equip students with the cultural capital they need to succeed in life. The curriculum is planned vertically and horizontally giving thought to the optimum knowledge sequence for building secure schema.

Year 7	Know and Understand	<p><b>Information Technolgy and E-Safety</b> Exploring various risks and ways to stay safe online. Searching the internet for information. Recognise inappropriate content including false information.</p> <p><b>Software for presenting</b> Using PowerPoint to produce a presentational piece for a particular audience.</p>	<p><b>Computing</b> <b>Topics:</b> Parts of the computer, input and output devices, hardware and software, storage devices, computational thinking, algorithms, and flowcharts.</p> <p>Investigate the hardware needed to build a PC system and the different software required.</p> <p>Identify both input and output devices.</p>	<p><b>Programming</b> <b>Topics:</b> Scratch. <b>Scratch</b> Introducing pupils to computational thinking techniques and developing their understanding of programming using sequence selection and iteration. Block-based coding using the online platform that is downloaded onto the physical devices. <b>Computational thinking</b> Introduction to the three strands of computational thinking of Abstraction, decomposition and Algorithmic thinking.</p>
	Skills	Searching the internet, identifying reliability and validity of information, insert template, format, insert table and shapes, insert text and images, insert new slide, slide layout, orientation, background colour, editing and inserting multimedia, programming using Scratch. Understanding computational thinking.		
	E-Safety	Cyber bullying, peer on peer abuse, online grooming, social media, using mobile phones, keep you and your computer safe (viruses, spam, fraud, and phishing).		
Year 8	Know and Understand	<p><b>Information Technolgy</b> <b>E-Safety</b> Exploring various risks and ways to stay safe. Recognising types of false information.</p> <p><b>Software for presenting</b> Using Publisher/PowerPoint to produce a presentational piece.</p> <p><b>IT Legal Framework</b> Understanding the Law and consequences: Health and Safety Copyright, Computer Misuse Act 1990, GDPR.</p>	<p><b>Computing</b> <b>Topics:</b> Computer systems, hardware, and software, binary and networking.</p> <p><b>Networking</b> Understand the purpose of a network, the different types and how they work. Explore different typologies.</p>	<p><b>Programming</b> <b>Topics: Coding Using Python</b> Recall key concepts from Year 7 in Scratch and begin to understand sequencing and selection in python <b>Computational thinking</b> Pupils will apply learning from previous years to plan a program with an algorithm.</p>

	Skills	Recognise types of false information, inserting slide, pages, text, images and animation, programming using textual based coding and application of Computational Thinking Strategies.		
	E-Safety	Review topics from Year 7, Youth Produced Sexual Imagery, disinformation, misinformation, hoaxes, scam, and fake websites.		
Year 9	Know and Understand	<b>Information Technolgy</b> <b>E-Safety</b> <b>AI usage, use of ‘deepfakes’, wider impact of using AI</b>	<b>Computing</b> <b>Topics:</b> <b>Binary</b> Converting from binary to denary and visa versa. Understanding how different files are stored and represented using binary digits	<b>Programming:</b> <b>Topics: Advancing programming</b> Building on previously learnt concepts in python building on this to learn on data types, Boolean logic and iteration. <b>Computational Thinking</b> Pupils will apply different algorithmic approaches to solve a problem for a given user.
	Skills	Understanding the wider impact of new technology, data processing and storage converting from binary to denary, data representation in binary, Iteration, algorithmic thinking,		
	E-Safety	During Internet Safety Week: Smart tech, safe choices – Exploring the safe and responsible use of AI		