Curriculum Intent

Computer Science and Information Technology
Mrs Y Smith

Curriculum Vision and Aims

The curriculum at Q3 Academy Great Barr is underpinned by the values that we hold as an institution. The curriculum will challenge, support and inspire all students in order to achieve appropriate and individualised progression beyond the Academy, preparing them for their future lives. We understand the importance of engaging parents/carers with their children's learning and therefore opportunities for home/Academy interaction will be integrated to build relationships, particularly at Key Stage 3.

The curriculum will be well-sequenced and challenging to ensure that all students, regardless of any previous or current disadvantage, are given every opportunity to be successful, following our Trust ethos: life to the full in pursuit of what is good, right, and true.

The curriculum should support students to:
- ✓ Achieve excellence, making excellent progress from their starting points
- ✓ Explore a range of subject areas and apply these in challenging situations
- ✓ Accept challenge and develop strategies to be successful in challenge
- ✓ Develop a life-long love of literacy and reading
- ✓ Use cross-curricular literacy, numeracy and computing skills fluently
- ✓ Understand their contribution to the wider World and how the World around them is changing
- ✓ Understand how to maintain their own, and others', physical and mental wellbeing
- ✓ Be creative and develop their own ideas and thinking
- ✓ Understand their responsibility within the Fundamental British Values and how to be good citizens, particularly demonstrating mutual respect and tolerance for others
- ✓ Understand and value history, heritage and traditions of communities
- ✓ Have access to appropriate careers and progression advice to ensure that they continue to be successful after they leave Q3 Academy Great Barr
- ✓ Be Ready, Respectful and Responsible for themselves and others around them.

Department Vision

The vision of the Computer Science and Information Technology department is to inspire students and to nurture a love of these subjects. Computers are an intrinsic part of everyone's lives from an early age and have an immense impact on all industries. Our students will need the skills to navigate new technologies that don't yet exist and we intend to provide them with the skills they will need; whether to inspire them to be the next set of innovators or the skills to be digitally literate and resilient in an ever-changing digital environment. We aim to get the students to see the wider picture, relate their learning to the real world and be prepared for new innovations as they are developed.

Subject Intent		
Key Stage 3 Computing is taught at KS3 and the intention is to provide opportunities to learn a wide range of computer science and Information Technology topics to give students the confidence to use computers and understand how they work. Topics included are: - Year 7 – Encryption; Binary; Logical thinking & an introduction to programming starting with block programming leading to an introduction to text-based programming Year 8 - Sort & Search techniques; computer logic & basic text-based programming skills building on skills from year 7. Year 9 – Web design; Digital graphics; Cybersecurity and building on programming skills using more advanced techniques.	**Key Stage 4** The intention at KS4 is to ensure all students have an opportunity to pursue their chosen pathway. To that end there is an academic route to Computer Science and a vocational route for Information Technology. The Computer Science route is to enable students with a plan to enter the world of Computer Science to acquire a range of skills and knowledge relating to the industry. To enable this, students are able to develop their logic & programming skills using industry based programming languages. The Information Technology route provides students with the most common skills used in the industry like Web Design; Graphics and knowledge of current Information Technology practices.	**Key Stage 5** The intention at KS5 is the provide students who plan to enter the computer science industry with skills and knowledge that will enable them to pursue a future career. The topics include but are not limited to System Software; Algorithms; Cybersecurity and advanced programming skills leading to a major project of the student's choice enabling them to explore areas of the industry that interest them.
Curriculum Specification		
Key Stage 3 National Curriculum	**Academic GSCE:** OCR Computer Science **Level 2 Vocational:** CNAT Creative Media	**Academic A Levels:** OCR Computer Science

Wider Curriculum Contribution

Our approach to supporting learning	Our approach and opportunities to stretch and challenge students
The department create and develop resources including guides to software they will encounter during their studies. The resources enable students to explore and develop their skills at their own pace. During lessons students are supported by teachers demonstrating skills using smartboards and visualizers where appropriate and one-to-one support if needed.	The department run a computing club for KS3 students every week where students are encouraged to explore areas of the subject not included in the discrete curriculum. At the computing club they get opportunities to program robots using a new language; explore gaming innovations as well as dismantle and rebuild computers.
Our contribution to Careers Education, Information and Guidance	**Our contribution to Literacy and Reading Development**
As part of the KS3 curriculum students have the opportunity to explore past innovators within the computer science industry. At KS4 (Creative iMedia) they are introduced to Careers within in the industry including exploring the role and responsibilities of those professions.	Every term the department provides a disciplinary reading opportunity where students can read a relevant written article which is then further explored in class discussion. The articles provided are always relevant to the topic being taught at that time and provide a window into putting context to any tier 3 words they might encounter in a real-world context.
Our contribution to Environment and Sustainability	**Our contribution to Safeguarding and Prevent**
At KS3 students are taught the environmental effects of E-Waste and encouraged to think of the need to recycle both equipment and resources used in the manufacture of electrical items. At KS4 students look into the effect on the environment of technology like 5G masts; drone technology, self-driving cars, etc.	For all key stages opportunities are built in to enable students to explore cybersecurity of any format including online safety and being able to critically evaluate social media content they might encounter. At KS3 students study the need for and the various methods used to protect data. At KS4 & KS5 they are taught more detailed areas of cybersecurity including methods used by the industry to ensure they quickly counteract any threats to data.
Our contribution to Social, Moral, Spiritual and Cultural development	**Our contribution to Character Education (Citizenship)**
At KS3 students are introduced to character sets including Unicode and how it has enabled the computer science industry to acknowledge the need to allow cultures to be able to work on devices that have their own Cyrillic script instead of just English characters and how it effects the digital divide.	Students are taught the importance of 'Netiquette' including appropriate tone and use of language in a digital setting. There are also expected to explore areas of ethical; environmental; legal and culture aspects of the digital world.
Our Contribution to Digital Literacy Development	**Our contribution to Numeracy Development**
The department have a major contribution to the digital literacy of our students. As part of the curriculum students learn how to be responsible; safe and critically evaluate any digital contact with a view to cybersecurity and social engineering. Students are also encouraged and taught how to create a range of digital artefacts throughout the curriculum to include items like websites; presentations; spreadsheets; digital images and computer programs. These skills are then transferable both within other curriculum areas and in their future careers.	As part of the computer science curriculum students are taught computer based numeracy to include binary/ denary/ hexadecimal conversions between number bases as well as adding binary numbers; use of binary shifts for multiplication and division and calculating file sizes for different types of data storage.