

Curriculum Rationale

Computing



William Hulme's Grammar School
The best in everyone™
Part of United Learning

Intent

Our world is digital. An understanding of computer science will enable young people to make informed choices in their digital world. This is important for all our children, not just those who will become the graphic designers, games programmers or software engineers of the future.

The Computing Curriculum is designed to equip students with knowledge, understanding, skills and a desire to learn more about the three disciplines within Computing: IT, Digital Literacy and Computer Science.

They will learn IT skills that will help them use a computer well, create digital products and become effective digital citizens.

They will become digitally literate including staying safe online, understanding the impact of computing, and learning the key moments that shaped our digital world.

And they will study Computer Science: how computers work, how they communicate globally, why Computational Thinking helps us solve problems, and how to create algorithms and programs to achieve our goals.

At all stages of the curriculum, students are encouraged to work independently, think deeply, and write effectively about the content. There are many opportunities for enrichment and further elective study, such as Code Club, the Bebras competition, iDea award, CREST award, various trips and co-curricular work.

SEND students will not be disadvantaged, as appropriate support and adjustments are embedded where necessary, including multiple means of participation and assessment, alternative work where appropriate, accessibility features and trained key worker support.

Implementation

The WHGS Computing curriculum is designed to cover the [Computing Programmes of Study in the English National Curriculum](#). We do this by aligning our KS3 curriculum with the [National Centre for Computing Education \(NCCE\) "Teach Computing" curriculum](#), which is:

- built around an innovative progression framework where computing content has been organised into interconnected networks called learning graphs
- created by subject experts, using the latest pedagogical research and teacher feedback

The WHGS KS3 Computing Curriculum is built on the NCCE curriculum but then adapted to the needs of our learners and the qualifications we offer at KS4. These adaptations remain aligned to the intent of the original NCCE objectives and the progression pathways remain the same. (An example of an adaptation is that we teach photo editing using Photoshop or Photopea instead of vector graphics with Inkscape, because the former skills are needed later if students choose Creative iMedia or Photography at KS4).

We also ensure we teach online safety by covering all eight aspects of online education detailed in "[Education for a Connected World](#)" – the government's framework to equip children and young people for digital life.

The WHGS KS3 Computing curriculum therefore delivers strong progress against

- all eight objectives in the Programmes of Study
- all ten strands of the Teach Computing Curriculum
- all eight objectives of "Education for a Connected World"

Students are thus well prepared for onward study of either Computer Science or Creative iMedia, if they so choose. Those topics in the CM, DD, IT, ET and SS strands (see [curriculum map](#)) are particularly relevant to iMedia. While the content in NW, DI, CS, IT, AL, PG and SS strands are vital for Computer Science Study. But the KS3 curriculum also stands alone as a key element of their Secondary education.

The WHGS KS4 Computing Curriculum includes the option to study Computer Science or Creative iMedia, and over a third of students take this option currently. Those that do not choose an option will continue to learn the key skills and knowledge vital for online safety and participation in a digital world through the teaching of the KS4 Programmes of Study in other subjects. Students will:

- **develop their capability, creativity and knowledge in computer science, digital media and information technology** – an example of this is the use of computers in Science to analyse results of experiments, or in Maths to plot graphs and find solutions to equations, or in English, Art or the Humanities to create and present their work.
- **develop and apply their analytic, problem-solving, design, and computational thinking skills** – this happens in Design, Science and Maths regularly, such as solving a word problem in Maths or meeting a brief within production constraints in Design.
- **understand how changes in technology affect safety, including new ways to protect their online privacy and identity, and how to identify and report a range of concerns** – a full PSHE programme includes assemblies and lessons on online safety throughout KS4.

The GCSE Computer Science at KS4 also prepares students to study A-level Computer Science which we offer at KS5. Creative iMedia at KS4 is excellent preparation for onward study of Digital Media or any creative A-level or apprenticeship, or our own Film Studies A-level.

The WHGS Computing Curriculum is expertly designed to prepare students for onward study of Computing and Digital Media at the highest level, as well as preparing students to effectively and safely navigate our digital world.

Impact

Students will feel empowered to become Computer Scientists or Digital Media creators of the future, and whether they take their studies further or not, they will all know how to participate meaningfully and safely online and take a full, effective part in our digital society.

At KS3 they will enjoy stretching themselves with programming challenges, becoming confident programmers in Python by the end of Year 9. Students will create and publish websites, analyse data and present it visually with spreadsheets, and produce professional artwork with photo-editing software. A Mastery approach means that all topics build on prior learning and students remain secure in what they have previously learned as they progress.

Students will be challenged by the complexity of programming in Computer Science GCSE, where they will learn industry standard skills such as Python programming, heavily sought after in the real world. The theoretical knowledge of computer systems, networks and computational thinking will stretch their cognitive abilities. Mathematical ability will be stretched with the study of binary and hexadecimal number systems needing mathematical concepts such as indices and place value. The system security topic prepares the ground for onward study in Cybersecurity, and we offer an EPQ in that subject in the Sixth Form which could lead to exciting and lucrative careers. And the Cambridge National in Creative iMedia covers all the skills required to produce digital products for the media industry such as creating digital graphics, websites and animations, while ensuring learners understand digital legislation, interpreting a brief, and knowing your purpose and audience. Creatives can really shine by making a stunning movie poster or eye-catching animation, while meeting the client requirements and considering success criteria like a professional creator.

The A-level in Computer Science prepares students for a wide range of degree-level studies and students often go on to study CS at Russell Group universities, and our booster sessions and "Discovery" virtual trips are used to help students with those choices. Alternatively, they can go straight into work at a local technology company, and we prepare them for this option with careers days and trips (recent trips have included UKFast, Music Magpie and PwC).

Across the curriculum, expert and passionate teachers share the joy of Computing with their students and empower them to be confident users of technology, creators of digital products and expert computer scientists. WHGS Alumni have gone on to study Computer Science degrees at University of Manchester, Queens University Belfast and Imperial College London and some now have fascinating and lucrative careers with PwC and ARM. We are proud of our Computing curriculum at WHGS.