



## Computing

### Curriculum Intent

By the end of their all-through education, a student of computing at Bradford Girls' Grammar school will:

- Be provided with a high-quality computing education that equips pupils to use computational thinking and creativity to understand and be able to contribute to the rapidly changing world.
- Pupils will develop an understanding and application in the fundamental principles and concepts of computer science by having the opportunity to write programs, design webpages and produce professional digital products to evaluate and analytically solve problems.
- Pupils will understand the digital age that we are in and be responsible, competent, confident, and creative users of information and communication technology.

Computing skills are a major factor in enabling children to be responsible, confident, competent, creative, and independent learners and it is our intention that pupils at Bradford Girls' Grammar school have every opportunity available to allow them to achieve this.

Pupils will be exposed to a diverse curriculum which will effectively prepare them with the knowledge, skills, and technical vocabulary to fully embrace a future of rapidly advancing computer technology.

### Curriculum Implementation

#### Key Stage 1

In Key stage 1 the curriculum is designed to allow all pupils to understand what algorithms are; how they are implemented as programs on digital devices, to create and debug simple programs. Use logical reasoning to predict the behaviour of simple programs. Recognise common uses of information technology beyond school. All pupils will be given the opportunity to use technology purposefully to create, organise, store, manipulate and retrieve digital content. E-safeguarding is taught from Year 1 to ensure our pupils can use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. Pupils will be taught to use technology purposefully to source and manipulate digital content, recognise common uses of information technology beyond school.

#### Key Stage 2

In Key stage 2 we build on the knowledge from KS1 to design, write and debug programs that accomplish specific goals, to solve problems by decomposing them into smaller parts. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. Pupils will understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. All pupils will be given the opportunity to collect, analyse, evaluate, and present data and information using a variety of applications on a range of digital devices. E-safeguarding is revisited in every year to make sure our pupils can use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. We teach our pupils how to use technology safely, recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

### **Key Stage 3**

In Key stage 3 the computing curriculum is designed so that all pupils regardless of prior learning before joining secondary school are all on the same starting point where they will be taught ICT skills such as logging into the school system, how to use remote learning applications such as email, OneDrive, Teams and SharePoint. All pupils will be given opportunity to learn basic computing skills such as typing and controlling the mouse.

After embedding the basic skills, we will move onto E-safety and incorporate learning to use ICT applications such as PowerPoint and Publisher. Students will then be able to move onto learning to program in Scratch and understand the fundamentals of algorithms. During KS3 students are taught in mixed ability groups.

The Year 8 curriculum is designed to build on knowledge gained in Year 7 and give students opportunity to learn more than one programming language, so they start with HTML and then move onto programming with Edublocks which builds upon programming using scratch and introduced Python. Students will learn how to use spreadsheet for modelling.

Year 9 Curriculum is designed to build upon knowledge in gained in Year 7 and 8 and allow students to explore computing concepts in greater depth. Students will continue to learn the concepts behind programming and use Python. Students will learn about image manipulation by using a program called Photopea. Students will also learn about computer networks, Cyber Security and Ethics.

### **Key Stage 4**

KS4 Curriculum is cyclical giving student's ample opportunity to build upon previous knowledge and prepare them for the requirements of the GCSE examination. Paper 1 is about Computational thinking, problem solving, code tracing and applied computing as well as theoretical knowledge of computer science from fundamentals of algorithms, data representation and computer systems. Paper 2 focusses on theoretical knowledge of fundamentals of computer networks, fundamentals of cyber security, ethical, legal, and environmental impacts of digital technology on wider society, including issues of privacy and aspects of software development.

Students will also need to prepare and complete the NEA and cover the following:

- Programming techniques
- Analysis
- Design
- Development
- Testing and evaluation and conclusions

### **Reading for Literacy**

Reading opportunities are developed throughout the schemes of learning with reading for understanding becoming more important further up the key stages. Key subject specific terminology will be introduced as early as possible in Key Stage 1. This allows students to develop an understanding of keywords and the definitions which go along with these words. In Computing there is some crossover with other departments which are identified within SOL teaching. For example, Abstraction means the same in Computer Science as it does in Art. This is an ongoing development with SOL and is being built on each year.

At Key Stage 4 we employ a range of strategies for students to learn key terminology and their meanings. To develop student's comprehension around subject specific concepts various resources online are used to augment the information provided in the subject textbook and used to ensure that students are able to read information and be able to reiterate and utilise this in independent work they produce.

### **Formative and Summative Assessment**

The purpose of assessment within Computing is to test the knowledge and practical skills of students throughout the varied topics that they study.

In KS1 and KS2 this is done via observation of work, questioning and pupil interviews. In KS3 there is an initial baseline test as not all our pupils come through school.

In KS3 & KS4 a mix of formative and summative assessment opportunities have been built into the SOL to ensure that we are checking understanding and ensuring students have the correct skills to progress. There will be the use of end of unit assessments and other knowledge-based tests and quizzes which have been built into KS3 and KS4 curriculum.

### **Retrieval Practice**

The computing curriculum is designed to revisit key computing concepts throughout the years from Year 1 to Year 11. Key vocabulary will be referred to in SOL and teaching resources. Also displays will be used and referred to in lessons to aid students understanding of key vocabulary and to help them become confident in its use.