

# KS4 Computing at Weston Favell Academy

## Introduction

The national curriculum for computing aims to ensure that at KS4:

All pupils must have the opportunity to study aspects of information technology and computer science at sufficient depth to allow them to progress to higher levels of study or to a professional career.

All pupils should be taught to:

- develop their capability, creativity and knowledge in computer science, digital media and information technology
- develop and apply their analytic, problem-solving, design, and computational thinking skills
- 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.

This can be reduced to three strands to be developed in schools.

- Computer science
- Information Technology
- Digital Literacy

At Weston Favell Academy. We cover the national curriculum through cross-curricular teaching.

## Cross Curricular Areas of Computing

### 1. Computational Thinking

Computational thinking involves problem-solving and critical thinking skills that are essential in computer science but can also be applied in various subjects. It includes breaking down complex problems into smaller, manageable parts and creating algorithms to solve them.

Coverage:

Maths: computational thinking involves solving complex equations step by step and using algorithms to find patterns in data. This could include processes like using the quadratic equation.

Science: students apply computational thinking by creating models and simulations to understand natural phenomena, such as using computer programs to simulate chemical reactions. This could also include defined sequences to solve problems like FIFA.

English: Computational thinking in English involves breaking down the process of essay writing into smaller steps, creating an outline algorithm to organize thoughts logically.

History: Students demonstrate computational thinking to analyse historical trends by creating charts or graphs to visualize data from different time periods.

### 2. Information Technology

Information technology refers to the use of technology tools, software, and hardware to access, manage, and manipulate information. It involves practical IT skills and understanding how technology works.

#### Coverage:

**Computer Science:** In a dedicated IT or computer science class, students learn programming languages like Python to create software applications.

**Geography:** Students use Geographic Information Systems (GIS) technology to analyse geographical data, create maps, and study spatial relationships.

**Design and Technology:** In this subject, students learn to use computer-aided design (CAD) software to create digital models and prototypes.

**Languages:** Information technology is applied by using language learning apps, online dictionaries, and language translation software to enhance language acquisition.

### 3. Digital Literacy

Digital literacy involves the ability to find, evaluate, and use digital information effectively and responsibly. It encompasses skills related to internet safety, media literacy, and understanding digital tools.

#### Coverage:

**Humanities:** students learn to critically assess online sources for bias and credibility when conducting research on historical events or current affairs.

**Physical Education:** Digital literacy is applied by using fitness tracking apps to monitor personal health and exercise routines while understanding privacy and data security considerations.

**PSHE:** Students study the ethical implications of digital technology, including discussions on cyberbullying, online privacy, and responsible online behaviour.

**Art:** Students analyse digital media, such as online videos or advertising, to understand how messages are constructed and delivered.