



## **Our Vision for Computing at Lister**

Computing is the future. In an ever evolving and fast paced world, computing is the life blood of industry; it is what people need to compete in the current market and a life skill that develops students' problem solving abilities that are needed in all spheres of life. We want our students to be able to evaluate and apply information technology, including new or unfamiliar technologies and to become responsible, competent, confident and creative users of information and communication technology. We also want our students to have the fundamental knowledge and skills and confidence and love of coding, so that they continue to code beyond Lister.

Students will be able to understand and apply the fundamental principles and concepts of computer science, through:

**Abstraction** - breaking down problems, analysing problems in computational terms

**Logic**- have repeated practical experience of writing computer programs in order to solve problems

**Writing algorithms**- flowcharts/pseudocode, not only links to literacy but forces students to think analytically and look at the broader picture.

## **What we teach in KS3 and why?**

In KS3, we have matched our schemes of work to the key components and skills needed for KS4 and those needed for everyday life outside of Lister. In year 7 we start students with Computer Literacy which are essential skills and tools students will need throughout their time at Lister including: E-safety, Email and key software students are expected to use. Students will then move on to learning basic coding using JavaScript, Microbit and Kodu, which will give students skills to analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve problems.

## **What we teach in KS4 Computing Science (GCSE)?**

The course commences by teaching students what makes a computer, how it is run by the CPU and how data is transferred. We go on to consider different systems as well as computer memory and data storage (binary). We develop this by considering different types of networks, threats to networks and how to prevent them. We explore the purpose and functionality of operating systems and utility software. We go on to consider the impact of technology on wider society and the subsequent ethical issues and laws around them.

Students develop computational thinking by understanding the key principles and how they are used to refine problems. Students understand, design, create and refine algorithms and understand different programming techniques. They also grow an understanding of how to develop a computer system that is not susceptible to attacks and how to test that it is robust.

## **What we teach in KS4 IT (Cambridge nationals)?**

We teach students to understand and apply the fundamental principles and concepts of IT, including the use of IT in the digital world, Internet of Everything, data manipulation and Augmented Reality.

The course consists of three main components: IT in the digital world this is assessed by taking an exam, data manipulation using spreadsheets and augmented reality to present information, both of which are controlled assessments

**PSHCE, SMSC Links:**

Computing develops students' problem solving skills and fosters their ability to find creative solutions. Computing builds on the students' resilience and encourages independent thinking. Students are taught a range of employability skills such as problem solving and how to work in teams. They are also taught a range of life skills that are transferable, e.g. creative thinking, conflict management, communication, organisation and presentation. Students understand their roles and responsibilities in industry and what they should expect when employed. E-safety is a fundamental part of computing and from year 7 onwards, students are taught how to stay safe and protect themselves from the dangers of the world wide web.