

COMPUTING

SUBJECT OVERVIEW AND PURPOSE

WHY IS COMPUTING IMPORTANT?

Computing is an important subject because it plays a significant role in many aspects of modern society and is increasingly becoming a crucial part of today's society. It helps in solving complex problems, automating tasks, creating new forms of entertainment, communicating with people, and making life easier in general.

Furthermore, the field of computing continues to evolve rapidly, offering numerous career opportunities in a variety of industries, including technology, finance, healthcare, and more.

In short, a strong understanding of computing and technology is essential for individuals to participate effectively as active participants in today's ever-progressing digital world.

HOW IS IT TAUGHT?

Our ambitious curriculum is delivered through fun, engaging and high-quality teaching of computing. This provides children with the confidence and competency to safely and securely navigate digital technology. In partnership with peers, children are able to discuss and evaluate their own work, which provides teachers with opportunities to revisit misconceptions and inform future planning.

Much of the subject-specific knowledge and skills, developed in computing, equips children with experiences, which will benefit them in primary school, secondary school, further education and future workplaces.

The computing curriculum is delivered through online and offline lessons

covering the three strands of computing: **Computer Science, Information Technology and Digital Literacy** (including Online Safety). Aspects of Online Safety are developed through links with PSHE and RSE. Skills and knowledge are built up gradually, using the use, modify and create cycle.

There are many careers in computing, including but not limited to:

- Software Developer
- Web Developer
- Music Producer
- Computer Systems Analyst
- App Developer
- Sound and video Engineer
- Graphic Designer
- IT Project Manager
- Architect
- Cybersecurity Specialist
- Video Games Designer
- Weather Forecaster
- Computer hardware engineer



“Computers themselves, and software yet to be developed, will revolutionise the way we learn.”

Steve Jobs

EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
COMPUTER SCIENCE						
<ul style="list-style-type: none"> ■ To know that being able to follow and give simple instructions is important in computing. ■ To understand that it is important for instructions to be in the right order. ■ To understand why a set of instructions may have gone wrong. ■ To understand that an algorithm is a set of clear instructions. ■ To introduce simple computing terminology. 	<ul style="list-style-type: none"> ■ To know the difference between hardware and software. ■ To understand that 'Programming/Coding' is creating instructions in a special language (code) that a computer can understand. ■ To understand that an algorithm is when instructions are put in a sequence. ■ To understand that decomposition means breaking a problem into manageable chunks and that it is important in computing. ■ To know that we call errors in an algorithm 'bugs' and fixing these 'debugging'. ■ To know that algorithms instruct an event and selecting 'run' makes the event happen. ■ To know the computing term 'sequencing'. 	<ul style="list-style-type: none"> ■ To use programming software to make objects move on screen. ■ To use the word 'debug' when correcting mistakes in programming. ■ To use the terms 'sequencing' and 'repetition/loops' correctly. ■ To incorporate loops within algorithms. ■ To predict what will happen for a short sequence of instructions. ■ To know that input devices get information into a computer and that output devices get information out of a computer. ■ To know that buttons are a form of input. 	<ul style="list-style-type: none"> ■ To use decomposition to explain how simple algorithms work. ■ To use logical thinking to explore, test and explain code. ■ To incorporate loops/repetition to make coding more efficient. ■ To make reasonable suggestions for how to debug their own and others' code. 	<ul style="list-style-type: none"> ■ To understand that a variable is a value that can change and use variables in programming. ■ To know that combining computational thinking skills (sequence, abstraction, decomposition) can help you solve a problem. ■ To use decomposition to solve a problem by finding out what code was used. ■ To use abstraction and pattern recognition to modify code. ■ To use selection, where a section of code is run only if a condition is met. 	<ul style="list-style-type: none"> ■ To understand that computers operate and send data, signals and messages using programming languages. ■ To learn that external devices can be programmed by a separate computer. ■ To learn the vocabulary associated with data: data and transmit. ■ To decompose a program without support. ■ To decompose programming in order to predict how the software will work, building on prior experiences. ■ To use a more systematic approach to debugging code, justifying what is wrong and how it can be corrected. ■ To write code to create a desired effect using a range of programming commands including sequencing, repetition, selection and variables within a program. 	<ul style="list-style-type: none"> ■ To know that there are many different types of coding languages and that these have different purposes. ■ To plan, write, debug, use and evaluate algorithms for computers that have a clear outcome. ■ To design and create a program which includes correct sequencing, repetition, selection/conditionals, a range of variables and various forms of input and output. ■ To solve problems by breaking them down into smaller parts. (decomposition).
INFORMATION TECHNOLOGY						
<ul style="list-style-type: none"> ■ To show resilience when using technology. ■ To experience a range of technology. ■ To know that we can communicate with other people using technology. 	<ul style="list-style-type: none"> ■ To use a camera/tablet to make simple videos. ■ To know that 'log in' and 'log out' means to begin and end a connection with a computer. ■ To know that a computer can be used to click, drag, fill and select. ■ To know that when we create something on a computer, it can be saved. ■ To organise simple data into pictograms. ■ To know parts of a computer (mouse, keyboard, monitor and computer). ■ To use the keyboard to enter text. ■ To use a mouse to scroll and left click. 	<ul style="list-style-type: none"> ■ To identify the benefits of using technology: finding information, creating and communicating. ■ To develop touch typing skills and know this is the fastest way to type. ■ To use the shift button / caps lock for capital letters. ■ To develop word processing skills, including altering text and copy and pasting. ■ To compare information found on the internet with the real world, and understand its validity. ■ To be able to navigate a website using web pages. ■ To create digital content, including music, pictures and animations. ■ To use data handling programmes to answer questions. 	<ul style="list-style-type: none"> ■ To combine images and text to create digital content. ■ To understand the vocabulary to do with databases learning about the pros and cons of digital versus paper databases. ■ To sort and filter databases to easily retrieve information. ■ To create and interpret charts and graphs to understand data. ■ To recognise how social media platforms are used to interact. ■ To know what the purpose of a computer network is and understand how data is transferred. ■ To understand what the different components of a computer do. ■ To understand that emails are electronic mail and that attachments can be added to them. 	<ul style="list-style-type: none"> ■ To know how to create a website with different web pages, using web design software. ■ To use software to work collaboratively with others online (documents, presentations, forms and spreadsheets). ■ To explain the key components of an array of different technologies. ■ To understand why some results are ranked before others when searching. ■ To understand keywords to effectively search for information on the internet. ■ To record data in a spreadsheet independently. ■ To review and improve work using a range of applications. 	<ul style="list-style-type: none"> ■ To review and improve work using a range of applications, including corrections and improvements. ■ To choose the most appropriate software for a given task. ■ To combine video, images, text and sound for a variety of purposes. ■ To identify ways to improve and edit programs, videos, images etc. ■ To learn how to use 3D design software. ■ To evaluate search engines according to their ability to effectively find information. ■ To learn about different forms of communication that have developed with the use of technology. ■ To use programming software to create music. ■ To understand how data is collected, for example by using formulas and sorting data within spreadsheets. 	<ul style="list-style-type: none"> ■ To identify different parts of the internet and the purpose of each area. ■ To use logical thinking to explore software independently, iterating ideas and testing continuously. ■ To combine video, images, text and sound to achieve a specific purpose for a given audience and evaluate their success against criteria. ■ To create a website with embedded links and multiple pages. ■ To understand how barcodes, QR codes and RFID work. ■ To gather and analyse data in real time. ■ To create formulas and sort data within spreadsheets containing more than one workbook.

EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
DIGITAL LITERACY (including Online Safety)						
<ul style="list-style-type: none"> ■ To recognise a range of technologies inside and out of the classroom. ■ To know that we do not share personal information about ourselves online. ■ To know that there is information including pictures, video and text on the internet. 	<ul style="list-style-type: none"> ■ To recognise that objects and devices may have computers inside them. ■ To know how technologies make our lives easier. ■ To know that passwords are important for security. ■ To know that the internet is many devices connected to one another. ■ To know that you should tell a trusted adult if you feel unsafe or worried online. ■ To know that people you do not know on the internet are strangers and are not who they say they are. ■ To know that we need to keep personal information and images safe online. 	<ul style="list-style-type: none"> ■ To explain the importance of keeping a password and other personal information private and safe, including how to protect this information. ■ To explain the importance of being kind, respectful and polite online and in real life. ■ To understand what information I should not post online. ■ To understand that not everything I see or read online is true. ■ To know who can view things online and what a Digital Footprint is. 	<ul style="list-style-type: none"> ■ To recognise that different information is shared online including facts, beliefs and opinions. ■ To learn how to identify reliable information when searching online. ■ To learn how to stay safe on social media. Considering the impact technology can have on mood. Learning about cyberbullying. ■ To learn that not all emails are genuine, recognising when an email might be fake and what to do about it. 	<ul style="list-style-type: none"> ■ To recognise that information on the internet might not be true or correct and that some sources are more trustworthy than others. ■ To understand the importance of limiting the amount of time spent using technology. ■ To know what behaviours are appropriate in order to stay safe and be respectful online. ■ To know how to make judgments about the accuracy of online searches. 	<ul style="list-style-type: none"> ■ To know who owns content on the internet and that a Creative Commons Licence gives permission to use intellectual property. ■ To identify possible dangers online and learn how to stay safe using SMART rules. ■ To evaluate the pros and cons of online communication. ■ To recognise that information on the internet might not be true or correct and learn ways of checking validity. ■ To learn what to do if they experience bullying online. ■ To learn how to use an online community safely. 	<ul style="list-style-type: none"> ■ To learn about the positive and negative impacts of sharing online. ■ To learn strategies to create a positive online reputation. ■ To learn strategies to capture evidence of online bullying in order to seek help. ■ To recognise that updated software can help to prevent data corruption and hacking.

