Computing Progression of Knowledge and Skills

Intent (Aims)	To support learners to become autonomous and independent users of technology who can apply their computing skills across the curriculum, and who are prepared for life after primary school and beyond.
Pedagogy (How?)	At Haseltine, our computing curriculum aims to give our children the life skills that will enable them to embrace and utilise new technology in a socially responsible and safe way. We recognise that huge advancements in technology have been made in recent years, and children are surrounded by, and often immersed in, a technological world. • Through the Kapow Curriculum, children will experience an array of different progressive and linkable skills and techniques over the course of a child's time at Haseltine. This ensures that children are constantly building upon previous learning and are able to expand their knowledge and understanding of problem solving, designing and constructing different products. • Children will complete 6 units a year, having one lesson a week over a term to complete each unit so children are fully immersed in each domain. • Across key stage 1 and 2, children will be exposed to the key areas of computing: ○ Hardware, networks and data representation, computational thinking, programming, using software, using email and internet searches, using data, wider use of technology. • Children are given a variety of programs to explore in detail, expanding their knowledge of how they look and work, allowing children to evaluate them to understand how they work. • Teachers support and model increasingly progressive evaluative skills to enable children to become digitally literate.

Curriculum (What?)	EYFS (technology)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Hardware		Learning how to operate a camera or tablet to take photos and videos. Learning how to explore and tinker with hardware to find out how it works. Recognising that some devices are input devices and others are output devices. Learning where keys are located on the keyboard.	Understanding what a computer is and that it's made up of different components. Recognising that buttons cause effects and that technology follows instructions. Learning how we know that technology is	To know the components that make up a network (Wireless access point/WAP, Network switch, Router, Server and devices). Drawing comparisons across different types of	Using tablets or digital cameras to film a weather forecast. Understanding that weather stations use sensors to gather and record data which predicts the weather.	Learning that external devices can be programmed by a separate computer. Learning the difference between ROM and RAM. Recognising how the size of RAM affects the processing of	Learning about the history of computers and how they have evolved over time. Using the understanding of historic computers to design a computer of the future. Understanding and identifying barcodes, QR

				doing what we want it to do via its output. Using greater control when taking photos with cameras, tablets or computers. Developing confidence with the keyboard and the basics of touch typing.	computers. To know that a router connects us to the internet. To know that a server is central to a network and responds to requests made.		data. **Understanding the fetch, decode, execute cycle.**	**codes and RFID. Identifying devices and applications that can scan or read barcodes, QR codes and RFID. Understanding how corruption can happen within data during transfer (for example when downloading, installing, copying and updating files). Identify different types of AI and their applications in everyday life.**
Networks and data representation				**Understanding that websites and videos are files that are shared from one computer to another. To know what a packet is and why it is important for website data transfer. Understanding how networks work and their purpose. Recognising**	**Understanding that computer networks provide multiple services, such as the World Wide Web, and opportunities for communication and collaboration.**	**Learning the vocabulary associated with data: data and transmit. Learning how the data for digital images can be compressed. Recognising that computers transfer data in binary and understanding simple binary addition. Relating binary signals (Boolean) to the simple character-based**	**Understanding that computer networks provide multiple services.**

				links between networks and the internet. Learning how data is transferred.		language, ASCII. Learning that messages can be sent by binary code, reading binary up to eight characters and carrying out binary calculations. Understanding how bit patterns represent images as pixels.	
Computational thinking		**Learning that decomposition means breaking a problem down into smaller parts. Using decomposition to solve unplugged challenges. Using logical reasoning to predict the behaviour of simple programs. Developing the skills associated with sequencing in unplugged activities. Following a basic set of instructions. Assembling instructions into a simple algorithm.**	**Articulating what decomposition is. Decomposing a game to predict the algorithms used to create it. Learning that there are different levels of abstraction. Explaining what an algorithm is. Following an algorithm. Creating a clear and precise algorithm. Learning that programs execute by following precise instructions. Incorporating loops within algorithms**	Using decomposition to explain the parts of a laptop computer. Using decomposition to explore the code behind an animation. Using repetition in programs. Using logical reasoning to explain how simple algorithms work. Explaining the purpose of an algorithm. Forming algorithms independently.	**Using decomposition to solve a problem by finding out what code was used. Using decomposition to understand the purpose of a script of code. Identifying patterns through unplugged activities. Using past experiences to help solve new problems. Using abstraction to identify the important parts when completing both plugged and unplugged activities.**	**Decomposing animations into a series of images. Decomposing a program without support. Decomposing a story to be able to plan a program to tell a story. Predicting how software will work based on previous experience. Writing more complex algorithms for a purpose.**	**Decomposing a program into an algorithm. Using past experiences to help solve new problems. Writing increasingly complex algorithms for a purpose. Analysing the effectiveness of prompts and refine them for improved AI outputs.**

Programming		Programming a Floor robot to follow a planned route. Learning to debug instructions when things go wrong. Using programming language to explain how a floor robot works. Learning to debug an algorithm in an unplugged scenario.	Using logical thinking to explore software, predicting, testing and explaining what it does. Using an algorithm to write a basic computer program. Using loop blocks when programming to repeat an instruction more than once.	Using logical thinking to explore more complex software; predicting, testing and explaining what it does. Incorporating loops to make code more efficient. Continuing existing code. Making reasonable suggestions for how to debug their own and others' code.	Creating algorithms for a specific purpose. Coding a simple game. Using abstraction and pattern recognition to modify code. Incorporating variables to make code more efficient.	Programming an animation. Iterating and developing their programming as they work. Confidently using loops in their programming. Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected. Writing code to create a desired effect. Using a range of programming commands. Using repetition within a program. Amending code within a live scenario.	Debugging quickly and effectively to make a program more efficient. Remixing existing code to explore a problem. Using and adapting nested loops. Programming using the language Python. Changing a program to personalise it. Evaluating code to understand its purpose. Predicting code and adapting it to a chosen purpose. Applying coding skills like decomposition and pattern recognition to interact with AI applications.
Using software		Using a basic range of tools within graphic editing software. Taking and editing photographs. Developing control of the mouse through	Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts. Using word processing software to type and reformat	Taking photographs and recording video to tell a story. Using software to edit and enhance their video adding music, sounds and text on	Building a web page and creating content for it. Designing and creating a webpage for a given purpose. Use online software for documents,	Using logical thinking to explore software more independently, making predictions based on their previous experience.	Using logical thinking to explore software independently, iterating ideas and testing continuously. Using search and word processing skills to create a

		dragging, clicking and resizing of images to create different effects. Developing understanding of different software tools.	text. Using software (and unplugged means) to create story animations. Creating and labelling images	screen with transitions.	presentations, forms and spreadsheets. Using software to work collaboratively with others.	Using software programme Sonic Pi/Scratch to create music. Using the video editing software to animate. Identify ways to improve and edit programs, videos, images etc. Independently learning how to use 3D design software package TinkerCAD.	presentation. Planning, recording and editing an audio recording. Creating and editing sound recordings for a specific purpose. Creating and editing videos, adding multiple elements: music, voiceover, sound, text and transitions. Using design software TinkerCAD to design a product. Creating a website with embedded links and multiple pages. Using text-based and image-based AI tools to generate content.
Using email and internet searches		Recognising devices that are connected to the internet. Searching and downloading images from the internet safely. Understanding that we are connected to others when	Searching for appropriate images to use in a document. Understanding what online information is.	Learning to log in and out of an email account. Writing an email including a subject, 'to' and 'from.' Sending an email with an attachment. Replying to an email.	Understanding why some results come before others when searching. Using keywords to effectively search for information on the internet. Understanding that information found by	Developing searching skills to help find relevant information on the internet. Learning how to use search engines effectively to find information, focussing on keyword	Understanding how search engines work

		using the internet.			searching the internet is not all grounded in fact. Searching the internet for data.	searches and evaluating search returns.	
Using data		Understanding that technology can be used to represent data in different ways: pictograms, tables, pie charts, bar charts, block graphs etc. Using representations to answer questions about data. Using software to explore and create pictograms and branching databases	Collecting and inputting data into a spreadsheet. Interpreting data from a spreadsheet.	Understanding the vocabulary to do with databases: field, record, data. Learning about the pros and cons of digital versus paper databases. Sorting and filtering databases to easily retrieve information. Creating and interpreting charts and graphs to understand data.	Understanding that data is used to forecast weather. Recording data in a spreadsheet independently. Sorting data in a spreadsheet to compare using the 'sort by…' option. Designing a device which gathers and records sensor data.	Understanding how data is collected in remote or dangerous places. Understanding how data might be used to tell us about a location	Understanding how barcodes, QR codes and RFID work. Gathering and analysing data in real time. Creating formulas and sorting data within spreadsheets.
Wider use of technology		Recognising common uses of information technology, including beyond school. Understanding some of the ways we can use the internet.	Learning how computers are used in the wider world.	Understanding the purpose of emails. Recognising how social media platforms are used to interact.	Understanding that software can be used collaboratively online to work as a team.	Learn about different forms of communication that have developed with the use of technology.	Learning about the Internet of Things and how it has led to 'big data'. Learning how 'big data' can be used to solve a problem or improve efficiency.
Online Safety		To know that the internet is many devices connected to one another. To know that you should tell a	To understand the difference between online and offline. To understand what information I should not post	To know that not everything on the internet is true: people share facts, beliefs and opinions online.	To understand some of the methods used to encourage people to buy things online. To understand that	To know different ways we can communicate online. To understand how online information can	To know that a 'digital footprint' means the information that exists on the internet as a result of a

		trusted adult if you feel unsafe or worried online. To know that people you do not know on the internet (online) are strangers and are not always who they say they are. To know that to stay safe online it is important to keep personal information safe. To know that 'sharing online means giving something specific to someone else via the internet and 'posting' online means placing information on the internet.	online. To know what the techniques are for creating a strong password. To know that you should ask permission from others before sharing about them online and that they have the right to say 'no.' To understand that not everything I see or read online is true.	To understand that the internet can affect your moods and feelings. To know that privacy settings limit who can access your important personal information Information, such as your name, age, gender etc. To know what social media is and that age restrictions apply.	technology can be designed to act like or impersonate living things. To understand that technology can be a distraction and identify when someone might need to limit the amount of time spent using technology. To understand what behaviours are appropriate in order to stay safe and be respectful online.	be used to form judgements. To understand some ways to deal with online bullying. To know that apps require permission to access private information and that you can alter the permissions. To know where I can go for support if I am being bullied online or feel that my health is being affected by time online.	person's online activity. To know what steps are required to capture bullying content as evidence. To understand that it is important to manage personal passwords effectively. To understand what it means to have a positive online reputation. To know some common online scams.