Hemingbrough Community Primary School
Progression of Skills
Computing

Area: Computer Science - Hardware

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
• Learning how to operate a camera to take photographs of meaningful creations or moments • Learning how to explore and tinker with hardware to develop familiarity and introduce relevant vocabulary • Learning how to operate a camera • Recognising that a range of technology is used in places such as homes and schools • Learning what a keyboard is and how to locate relevant keys • Learning what a mouse is and developing basic mouse skills such as moving and clicking	• Learning how to explore and tinker with hardware to find out how it works • Understanding that computers and devices around us use inputs and outputs, identifying some of these • Learning where keys are located on the keyboard • Learning how to operate a camera	• 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 doing what we want it to do via its output. • Using greater control when taking photos with tablets or computers • Developing confidence with the keyboard and the basics of touch typing	• Understanding what the different components of a computer do and how they work together • Drawing comparisons across different types of computers • Learning what a server does	• Learning about the purpose of routers	• 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 data • Understanding the fetch, decode, execute cycle	• 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 codes and RFID • Identifying devices and applications that can scan or read barcodes, QR codes and RFID • Acknowledging that corruption can happen within data during transfer (for example when downloading, installing, copying and updating files)

Area: Computer Science – Networks and Data Representation

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
	• Understanding what the Internet is		• Learning what a network is and its purpose • Identifying the key components within a network, including whether they are wired or wireless • Recognising links between networks and the internet • Learning how data is transferred	• Consolidating understanding of the key components of a network • Understanding that websites & videos are files that are shared from one computer to another • Learning about the role of packets • 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 language, ASCII • Learning that messages can be sent by binary code, reading binary up to 8 characters and carrying out binary calculations • Understanding how bit patterns represent images as pixels	• Understanding that computer networks provide multiple services

Area: Computer Science – Computational Thinking

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
• Using logical reasoning to read simple instructions and predict the outcome	• Using logical reasoning to predict the behaviour of simple programs • Developing the skills associated with sequencing in unplugged activities • Learning that an algorithm is a set of step-by-step instructions used to carry out a task, in a specific order • Follow 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 • Using decomposition to decompose a story into smaller parts • Learning what abstraction is • Learning that there are different levels of abstraction • Explaining what an algorithm is • Following an algorithm • Creating a clear and precise algorithm • Learning that computers use algorithms to make predictions • 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 • Understanding that computers follow instructions • Using an algorithm to explain the roles of different parts of a computer • Using logical reasoning to explain how simple algorithms work • Explaining the purpose of an algorithm • Forming algorithms independently	• Solving unplugged problems by decomposing them into smaller parts • Using decomposition to understand the purpose of a script of code • Using decomposition to help solve problems • 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 • Creating algorithms for a specific purpose	• 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

Area: Computer Science – Programming

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
• Following instructions as part of practical activities and games and learning to debug when things go wrong • Learning to give simple instructions • Learning that an algorithm is a set of instructions to carry out a task, in a specific order • Experimenting with programming a Bee-bot/Bluebot and learning how to give simple commands • Learning to debug instructions, with the help of an adult, when things go wrong	• Programming a Bee-bot/Virtual Bee-bot to follow a planned route • Learning to debug instructions when things go wrong • Developing a how to video to explain how the Bee-bot 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 • Learning what loops are • Incorporating loops to make code more efficient	• Using logical thinking to explore more complex software; predicting, testing and explaining what it does • Incorporating loops to make code more efficient • Remixing existing code • Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected	• Understanding that websites can be altered by exploring the code beneath the site • Coding a simple game • Using abstraction and pattern recognition to modify code • Incorporating variables to make code more efficient • Remixing existing code • Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected	• Programming an animation • Iterating and developing their programming as they work • Beginning to use nested loops (loops within loops) • Debugging their own code • 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 • Altering a website's code to create changes

Area: Information Technology - Using Software

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
• Using a simple online paint tool to create digital art	• Using a basic range of tools within graphic editing software • Taking and editing photographs • Understanding how to create digital art using an online paint tool • Developing control of the mouse through dragging, clicking and resizing of images to create different effects • Developing understanding of different software tools	• Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts • Using word processing software to type and reformat text • Using software to create story animations • Creating and labelling images	• Taking photographs and recording video to tell a story. • Using software to edit and enhance their video adding music, sounds and text on screen with transitions	• Building a web page and creating content for it • Designing and creating a webpage for a given purpose • Use Google online software for documents, presentations, forms and spreadsheets. • Work collaboratively with others	• Using logical thinking to explore software more independently, making predictions based on their previous experience • Using a software programme (Sonic Pi or Scratch) to create music • Using video editing software or animation software to animate • Identify ways to improve and edit programs, videos, images etc. • Independently learning how to use 3D design software package TinkerCAD	• Using logical thinking to explore software independently, iterating ideas and testing continuously • Using search and word processing skills to create a presentation • Planning, recording and editing a radio play • Creating and editing sound recordings for a specific purpose • Creating and editing videos, adding multiple elements: music, voiceover, sound, text and transitions to create a video advert • Using design software TinkerCAD to design a product • Creating a website with embedded links and multiple pages

Area: Information Technology – Using email and the internet

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
• Participating in group image searches, led by the teacher	• Searching and downloading images from the internet safely • Understanding that we are connected to others when using the internet	• Understanding that personal information should not be shared on the internet. • Learning how to be respectful to others when sharing content online.	• 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 • Identifying useful terms and phrases for search engines	• Understanding why some results come before others when searching • Understanding that information on the internet is not all grounded in fact	• Developing searching skills to help find relevant information on the internet • Understanding how apps can access our personal information and how to alter the permissions.	• Understanding how search engines work

Area: Information Technology – Using data

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
• Representing data through sorting and categorising objects in unplugged scenarios • Representing data through pictograms • Exploring branch databases through physical games	•Introduction to spreadsheets • Representing data in tables, charts and pictograms • Sorting data and creating branching databases • Identifying where digital content can have advantages over paper when storing and manipulating data	• Collecting and inputting data into a spreadsheet • Interpreting data	• Understanding the vocabulary associated 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	• Designing a weather station which gathers and records sensor data	• Understanding how data is collected	• Understanding how barcodes, QR codes and RFID work • Gathering and analysing data in real time • Creating formulas and sorting data within spreadsheets

Area: Information Technology – Wider use of technology

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
	• 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. • Learning what a search engine is • 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

Area: Digital Literacy (incl. e-safety)

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
• Recognising that a range of technology is used in places such as homes and schools • Learning to log in and log out • When using the internet alongside an adult, or independently, learning what to do if they come across something that worries them or makes them feel uncomfortable	• Logging in and out and saving work on their own account • Understand the importance of a password • When using the internet to search for images, learning what to do if they come across something online that worries them or makes them feel uncomfortable • Recognising when someone has been unkind online • Learning some top tips for staying safe online • Understanding how we 'share' information on the internet	•Understanding that personal information should not be shared on the internet. • Learning how to be respectful to others when sharing content online.	• Learning to be a responsible digital citizen; understanding their responsibilities to treat others respectfully and recognising when digital behaviour is unkind • Learning about cyberbullying • Learning that not all emails are genuine, recognising when an email might be fake and what to do about it • Learning that not all information on the internet is factual • Understanding who personal information should/ should not be shared with	• Recognising what appropriate behaviour is when collaborating with others online • Recognising that information on the Internet might not be true or correct and that some sources are more trustworthy than others • Learning about different forms of advertising on the internet	• Learning about how permissions work and how to change them • Identifying possible issues with online communication • Considering the effects of screen-time on physical and mental wellbeing • Learning about online bullying and where to seek advice	• Understanding the importance of secure passwords and how to create them, along with two-step authentication • Using search engines safely and effectively • Recognising that updated software can help to prevent data corruption and hacking • Considering their digital footprint and online reputation and future implications they may have • Learning about how to collect evidence and report online bullying concerns