



Computing Progression Map

<p>Penguins EYFS</p>	<p><i>By the end of EYFS</i>, children should:</p> <p>Computer Science</p> <ul style="list-style-type: none">• explore and tinker with hardware to develop familiarity and use relevant vocabulary• recognise and identify familiar letters and numbers on a keyboard• use basic mouse skills such as moving and clicking• use logical reasoning to understand simple instructions and predict the outcome• follow instructions as part of practical activities and games• give simple instructions• experiment with programming a Bee-bot/Bluebot, giving simple commands• debug instructions, with the help of an adult, when things go wrong <p>Information Technology</p> <ul style="list-style-type: none">• use a simple online paint tool to create digital art• represent data through sorting and categorising objects in unplugged scenarios• represent data through physical pictograms• explore branch databases through physical games <p>Digital Literacy</p> <ul style="list-style-type: none">• learn to log in and log out
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**Turtles
Year 1**

By the end of Year 1, children should:

Computer Science

- operate a camera or tablet to take photos and videos
- explore and tinker with hardware to find out how it works
- recognize that some devices are input devices and others are output devices
- know keys are located on the keyboard
- know decomposition means breaking a problem down into smaller parts
- use decomposition to solve unplugged challenges
- use logical reasoning to predict the behaviour of simple programs
- develop the skills associated with sequencing in unplugged activities
- follow a basic set of instructions
- assemble instructions into a simple algorithm
- programme a floor robot to follow a planned route
- debug instructions when things go wrong
- use programming language to explain how a floor robot works
- debug an algorithm in an unplugged scenario.

Information Technology

- use a basic range of tools within graphic editing software
- take and edit photographs
- develop control of the mouse through dragging, clicking and resizing of images to create different effects
- develop understanding of different software tools
- recognise devices that are connected to the internet
- understand that technology can be used to represent data in different ways: pictograms, tables, pie charts, bar charts, block graphs etc.

	<ul style="list-style-type: none"> • use representations to answer questions about data • use software to explore and create pictograms and branching databases <p>Digital Literacy</p> <ul style="list-style-type: none"> • log in and out and save work on their own account
<p>Dolphins Year 2</p>	<p><i>By the end of Year 2,</i> children should:</p> <p>Computer Science</p> <ul style="list-style-type: none"> • understand what a computer is and that it's made up of different components • recognise that buttons cause effects and that technology follows instructions • know that technology is doing what we want it to do via its output • use greater control when taking photos with cameras, tablets or computers • develop confidence with the keyboard and the basics of touch typing • articulate what decomposition is • decompose a game to predict the algorithms used to create it • know that there are different levels of abstraction • explain what an algorithm is • follow an algorithm • create a clear and precise algorithm • know that programs execute by following precise instructions • incorporate loops within algorithms <p>Information Technology</p> <ul style="list-style-type: none"> • develop word processing skills, including altering text, copying and pasting and using keyboard shortcuts • use word processing software to type and reformat text • create and label images • collect and input data into a spreadsheet

	<ul style="list-style-type: none"> • interpret data from a spreadsheet • know how computers are used in the wider world <p>Digital Literacy</p> <ul style="list-style-type: none"> • know how to create a strong password • understanding how to stay safe when talking to people online and what to do if they see or hear something online that makes them feel upset or uncomfortable • identify whether information is safe or unsafe to be shared online • be respectful of others when sharing online and ask for their permission before sharing content • know strategies for checking if something they read online is true.
<p>Seahorses Year 3/4</p>	<p><i>By the end of Year 4</i>, children should:</p> <p>Computer Science</p> <ul style="list-style-type: none"> • understand what the different components of a computer do and how they work together • draw comparisons across different types of computers • learn about the purpose of routers • understanding the role of the key components of a network • identify the key components within a network, including whether they are wired or wireless • understand that websites and videos are files that are shared from one computer to another • know about the role of packets • understand how networks work and their purpose • recognise links between networks and the internet • learn how data is transferred • understand that computer networks provide multiple services, such as the World Wide Web, and opportunities for communication and collaboration <p>Information Technology</p> <ul style="list-style-type: none"> • use decomposition to explain the parts of a laptop computer

- use decomposition to explore the code behind an animation
- use repetition in programs
- use logical reasoning to explain how simple algorithms work
- explain the purpose of an algorithm
- form algorithms independently
- use decomposition to solve a problem by finding out what code was used
- use decomposition to understand the purpose of a script of code
- identify patterns through unplugged activities
- use past experiences to help solve new problems
- use abstraction to identify the important parts when completing both plugged and unplugged activities
- use logical thinking to explore more complex software; predicting, testing and explaining what it does. Incorporating loops to make code more efficient
- continuing existing code
- make reasonable suggestions for how to debug their own and others' code
- create algorithms for a specific purpose
- code a simple game
- use abstraction and pattern recognition to modify code
- incorporate variables to make code more efficient
- remixing existing code
- taking photographs and recording video to tell a story
- use software to edit and enhance their video adding music, sounds and text on screen with transitions
- build a web page and creating content for it
- use online software for documents, presentations, forms and spreadsheets

	<ul style="list-style-type: none"> • use software to work collaboratively with others. • understand that information found by searching the internet is not all grounded in fact • understanding that software can be used collaboratively online to work as a team <p>Digital Literacy</p> <ul style="list-style-type: none"> • recognise that information on the internet might not be true or correct and that some sources are more trustworthy than others • make judgements about the accuracy of online searches • identify forms of advertising online. • recognise what appropriate behaviour is when collaborating with others online • reflect on the positives and negatives of time spent online • identify respectful and disrespectful online behaviour
<p>Sharks Year 5/6</p>	<p><i>By the end of Year 6</i>, children should:</p> <p>Computer Science</p> <ul style="list-style-type: none"> • know that external devices can be programmed by a separate computer • recognise how the size of RAM affects the processing of data • know about the history of computers and how they have evolved over time • use the understanding of historic computers to design a computer of the future • understand and identify barcodes, QR codes and RFID • identify devices and applications that can scan or read barcodes, QR codes and RFID • know the vocabulary associated with data: data and transmit • recognise that computers transfer data in binary and understanding simple binary addition • relate binary signals (Boolean) to the simple character-based language, ASCII • learn that messages can be sent by binary code, reading binary up to eight characters and carrying out binary calculations • predict how software will work based on previous experience

- write more complex algorithms for a purpose
- decompose a program into an algorithm
- use past experiences to help solve new problems
- write increasingly complex algorithms for a purpose
- iterate and developing their programming as they work
- confidently use loops in their programming
- use a more systematic approach to debugging code, justifying what is wrong and how it can be corrected
- write code to create a desired effect
- use a range of programming commands
- use repetition within a program
- amend code within a live scenario
- debug quickly and effectively to make a program more efficient
- remix existing code to explore a problem
- use and adapt nested loops
- programme using the language Python
- change a program to personalise it
- evaluate code to understand its purpose
- predicting code and adapting it to a chosen purpose

Information Technology

- use logical thinking to explore software more independently, making predictions based on their previous experience
- use software programme Sonic Pi/Scratch to create music
- identify ways to improve and edit programs, videos, images etc.
- use logical thinking to explore software independently, iterating ideas and testing continuously

- use search and word processing skills to create a presentation
- create and edit sound recordings for a specific purpose
- develop searching skills to help find relevant information on the internet
- use search engines effectively to find information, focusing on keyword searches and evaluating search returns
- understand how search engines work
- understand how data is collected in remote or dangerous places
- understand how data might be used to tell us about a location
- understand how barcodes, QR codes and RFID work
- gather and analyse data in real time
- create formulas and sorting data within spreadsheets
- know about different forms of communication that have developed with the use of technology
- know how 'big data' can be used to solve a problem or improve efficiency

Digital Literacy

- identify possible dangers online and learning how to stay safe
- evaluate the pros and cons of online communication
- recognise that information on the internet might not be true or correct and learning ways of checking validity
- know what to do if they experience bullying online
- use an online community safely
- understand the importance of secure passwords and how to create them
- use search engines safely and effectively.