

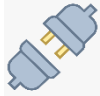
Robin Hood Primary Root and Branch Computing Curriculum Plan

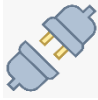


Foundation Stage:

Following the changes made to the EYFS curriculum in 2021 and the removal of the Technology strand, the below objectives are given to EYFS making evident linked to the Early Learning Goals. This list is not exhaustive for the teaching of Computing within our setting.

	Objectives	Links to Early Learning Goals
Computer Science	- Follow and create simple instructions. - Listen to everyday instructions and begin to order them into a sequence. - Use simple sequences to achieve a particular goal. E.g. making a sandwich, brushing our teeth, planting a seed.	- Personal, Social and Emotional Development: Self-regulation. - Personal, Social and Emotional Development: Self-regulation. - Personal, Social and Emotional Development: Self-regulation.
Information Technology	- Recognise technology around them, naming it and recognising the use both inside and outside of school. - Understand how different jobs use different forms of technology to complete tasks. E.g. a shop worker using a till, a dentist using a scanner. - Use technology around them to mark make, draw simple shapes and access age-appropriate software (IWB, MiniMash). - Find and recognise letters of the alphabet on a keyboard, both standard and electronic (iPad) - Use a range of digital tools such as a camera, voice recorder, keyboard, touchscreen.	- Knowledge and Understanding of the World: People, Culture and Communities. - Knowledge and Understanding of the World: People, Culture and Communities. - Physical Development: Fine Motor Skills - Literacy: Word Reading - Physical Development: Fine Motor Skills
Digital Literacy	- Safely use technology for its intended purpose. E.g. using a timer to record how long something takes, or a camera to capture a picture. - Understand the importance of asking an adult for permission and telling an adult if something upsets you online. - Know the importance of being kind, both online and in person.	- Expressive Arts and Design: Creating with Materials - Personal, Social and Emotional Development: Managing Self - Personal, Social and Emotional Development: Building Relationships

Year Group		Root skills (What are the objectives for the year group?)	Branch knowledge (How <u>might</u> I teach/meet these objectives?)	Leaf knowledge (What key vocabulary do children need to know?)
Year 1	Computer Science	- Create and follow instructions, which include straight and turning commands. Initially the instructions should be given one at a time, then progress to a longer simple sequence of instructions. - Discuss and explore what will happen when instructions are given in a sequence. - Give a sequence of instructions to complete a simple task. - Order events correctly in order to achieve an outcome.	 Create simple algorithms, moving a character from A to B.  Beebot cards can be used with whole-class commands/sequences.  Bluebot can be used to move a character from A to B also.  Teach unplugged using instructions for an everyday activity.	Algorithms are a sequence of events which help you to achieve a certain goal. Algorithms are used by both humans and computers, but computers need much clearer instructions. Computers and other forms of technology are controlled by these algorithms. We need to be really clear with our instructions and they must be in the correct order otherwise we may get tasks wrong.
	Information Technology	- Know how to take a photograph, sometimes using zoom and editing tools where appropriate. - Record written information using technology. - Create a digital image using paintbrush tools, changing variables (brush type, colour, thickness) and correcting mistakes (eraser). - Children will begin to learn the basics of keyboard typing, including the use of the arrow keys and space bar. This might be to write a simple sentence or keywords. - Children begin to explore data handling digitally, using online graphs and charts to display collected data.	 Using typing games (2type) on Purple Mash to support using multiple fingers.  Camera tools, including mark-up to edit photographs.  Pic Collage to bring skills together (taking photos, typing...)  Cbeebies games which support typing skills.  Data handling can be explored in Maths, online using J2data .	If something is really far away, we can zoom in to get a better photograph. We must hold the camera really still so that the picture is clear instead of blurred or fuzzy. We can edit a photograph by adding an effect to it. We can draw using brush tools, where we can change the colour, thickness and type of brush. We can correct our mistakes using the eraser tool. Locate different letters and numbers on the keyboard. I can use the arrow keys to control a game. The space bar is used to separate words in a sentence.

	Digital Literacy	• Begin to use digital devices safely and correctly, by recognising the common uses for technology found both in the classroom and at home. • Name appropriate adults who they can talk to when something online leaves them feeling upset or uncomfortable. • Know some ways that the internet can be used to support learning in and out of school • Identify ways to keep themselves safe online and to demonstrate some ways of reducing risk when playing games.	Discussion based sessions. Use of videos and stories to reiterate the key messages. Role-play/drama activities. Practical use of digital devices to aid understanding of the way they work and what they are used for. Supported by allocated tasks during Online Safety Week.	Each item of technology has a purpose – this is what we use it for. Sometimes, items have buttons or switches or they might be touchscreen. If something online upsets me in any way, I can tell an adult or home or I can tell my teacher in school. Telling the truth is really important to help us keep safe online.
Year 2	Computer Science	• Sequence events correctly to achieve an outcome. E.g. character gets to a particular point, character makes a sound, character changes size. • Start to create algorithms that can be debugged in order to make sure they work achieve a set goal (this may be from Point A to Point B). • Identify bugs within a sequence, beginning to explain why it is incorrect and how it can be fixed. • Predict the outcome of a simple algorithm through logical reasoning and understanding of sequence. • Understand that a forever loop will repeat selected parts of a sequence.	 Change looks and add sounds to create programmed stories.  Introduce debugging when children get stuck on each level.  Teach unplugged using sequences for everyday activities.	Algorithms are a sequence of events which help you to achieve a certain goal. The order of an algorithm is important otherwise we may not achieve what we set out to achieve. If I want something to repeat, I can use the forever loop around a section of my code. Debugging is the process of removing a bug or fault. Children must carefully watch their program in action so that they can predict outcomes and fix any bugs that may arise.

	Information Technology	- Complete simple internet searches to locate a website. - Independently log into a computer or account using login details, remembering to logout afterwards, recognising the importance. - Be able to save or store work using the school server or personal accounts for future use. - Use software to present information such as text and images from clipart. - Begin to use additional keys on the keyboard to support the creation of digital content (caps lock, enter, shift). - Explore font size, colour and style and use bold and underline where appropriate. - Understand different ways of presenting numerical data.	 Use keyboard skills to create typed stories on 2create a story.  Increase familiarity with internet searching, logging on, etc.  Teach unplugged using activities around keyboard, locating new keys.  Collected data can be presented using charts and graphs on J2data .	Children should be familiar with basic skills such as logging in and logging out of an account to access their work. These details help keep their work safe. We can use technology to help us present out work. We can use text, images and drawings to make our work stand out. When using the internet, we can search for websites in the search bar. This finds out website very quickly. The enter key allows me to type on a new line. Using the caps lock will help me to use capital letters. Shift enables me to use additional keys on the keyboard. Changing the appearance of text might including changing the font size, colour or style.
	Digital Literacy	- Recognise what is age-appropriate for them to be doing on digital devices and the internet. - Know what types of information are considered personal and private. - Understand the difference between ‘private’ and ‘public’. - Explain the importance of a password and where we might use one. - Be familiar with strategies that they can use to be safe online. E.g. name an appropriate adult to tell. - Recognise the common uses for technology found in the wider world. E.g. bank, library, supermarket.	Discussion based sessions. Use of videos and stories to reiterate the key messages. Role-play/drama activities. Practical use of digital devices to aid understanding of the way they work and what they are used for. Supported by allocated tasks during Online Safety Week. Codeit resources	Passwords can be used to protect our information, data, pictures and accounts. These must not be shared. We must make sensible choices when sharing our information, knowing that it is no longer private when other people know. Public information is the idea that everyone has access at any time. If information is private, this is the opposite and the intended audience is much smaller and selected.

Year 3

Computer Science

- Recognise and use a series of input devices.
- Recognise and use a series or output devices.
- Know that certain devices can be a combination of both input and output, discuss these using definitions of both.
- Create algorithms for a character with an intended outcome in mind.
- Edit and refine a sequence to ensure no mistakes are made (debugging).
- Use repetition within a sequence using a forever loop – count loop, nested loop.
- Use conditional statements (if... then...) to recognise links between two characters.



Coding levels to progress through using 2code, including tutorials.



Build on prior knowledge by applying skills to Scratch.



A.L.E.X game can support basic sequencing.



Create sequences to move the Spheros in different ways.

Input devices are forms of **technology** the put **information** into a **computer** (microphone, webcam, mouse, keyboard).

Output devices, such as a printer, monitor, speaker, give something out. In Scratch, our character is called a **sprite** and we can use the different **sequences** to make it do something.

Sequences must begin with an **event** and when coding, children must have a **goal** or **outcome** in mind.

Information Technology

- Use a range of software to present information that incorporates multimedia and animation between slides.
- Accurately type with some speed, using both hands on the keyboard.
- Capture video for a purpose using trim tools and mute to edit where necessary.
- Create purposeful, professional animations that make good use of camera settings and timings.
- Use software to locate countries, cities and towns.



Digital presentations including animations, slide transitions.



Pinpoint locations on Google maps, exploring zoom and search.



Build on prior knowledge of typing to create and store documents.



Multimedia can be explored on Clips, creating videos with sound, still image and animations.



Stop-Motion animation replaces iCanAnimate.

I can **adapt** the **speed** of my animation by taking **multiple frames** every time I move an object.

Once an object has been moved, there **ghost** on the screen shows where the object was moved from.

The recording device must be kept **still** and the **background** must be free from any movement or **interference**.

Children should explore different ways of changing **font** and should look at ways of using slide **transitions** and animations when creating presentations. Presentations should be created for an **audience**, with a **purpose** in mind.

	Digital Literacy	- Understand what is acceptable and unacceptable online and the meaning of both terms. - Know how to safely and appropriately download images from the internet, knowing where to store them and access at a later point. - Have some understanding of copyright and the use of watermarks on images. - Gain confidence in creating, sending, receiving and deleting an email using a safe account. - Understand what to do with pop ups how targeted advertisements work over the internet.	 KS2 scheme of work on Be Internet Legends.  Children can safely practise sending and receiving emails on 2email.  Unplugged activities.	In order to find appropriate images online, we must ensure that our searches are safe and that we know how to report a concern if we have one. Things that are okay and safe to do online are deemed to be acceptable. Anything which is unsafe, upsetting to people or poses any danger is unacceptable. Images which are copyright must not be downloaded as these are intellectual property of the owner. Photographers often add a watermark to their photos in order to protect their work from being used without their permission. We must always think and check before we send an email as this is irreversible. Children become familiar with the terms; sender, recipient, inbox, outbox, spam... A pop-up is form of online advertising focused on attracting Web traffic.
Year 4	Computer Science	to accomplish a goal. sequence to ensure algorithms are well thought within programming (if... then... this...) which confidently explain problems you may face in code. in a created program (e.g. time, points scoring). coding works by creating simple shapes with	 Children can bring points scoring and timers into games on Scratch.  Progress through levels on Purple Mash's 2code.  Access text-based coding on Purple Mash using '2logo'  Lightbot can support programming skills.	The order in which our algorithm runs is called the sequence. We can use conditional statements to link parts of an algorithm. <i>When ____ happens, ____ happens.</i> If the code isn't performing as expected, children will need to debug the fault in order to fix it. To include timers and points systems, children will need to introduce a variable – a value which can change.

	Information Technology	- Regularly use software to access and share documents that support learning, encouraging communication between two people. - Receive a video call, adjusting audio and video settings improve the overall quality of the call. - Understand how computer networks can provide multiple services, such as the World Wide Web. - Make appropriate internet searches for research purposes, using split screen on an iPad to encourage note taking. - Understand how to copy and paste both on an iPad and using keyboard shortcuts. - Numerical data can be presented using software. - Understand the difference between bitmap and vector images.	 Children will regularly locate, access and store work using Showbie.  Explore browsers to understand computer networks and WWW.  Access digital tables and charts using Excel, looking at how data is presented.  Multimedia can be explored on Clips, creating videos with sound, still image and animations.  Children deepen their understanding of presentation skills by applying to new software.	If we are adding timers or scoring systems, there are known as variables, this is where the computer system can change simple pieces of data. Tim Berners-Lee invented the World Wide Web in 1989. The Internet is a global network of networks while the Web is collection of information which is accessed via the Internet To copy and paste on a keyboard we can use CTRL + C to copy and CTRL + V to paste. Excel can be used to present numerical data in the form of tables, graphs and charts that we can interpret with confidence. Bitmap images can become pixelated once resized, whilst vector images remain of high quality. Each increment of an animation – onion-skinning. WAN (wider area network) / LAN (local area network)
	Digital Literacy	- Know and implement strategies to help us when we access something inappropriate online. - Be discerning when reading content online, recognising that not everything on the internet is true. - Know how to keep things safe by having a good, strong password which is memorable and unique. - Know how to safely call using video calling apps.	 KS2 scheme of work on Be Internet Legends.  Explore video calling, setting and safety using Zoom.  Unplugged activities.	When using digital devices, we can report, block or tell an adult when something has upset us. We can also blacklist certain websites or use parental controls to reduce the risk of danger. Passwords must be unique but must also by memorable. A strong password uses a combination of lower case, capitals, numbers and symbols.

Year 5

Computer Science

- Refine a procedure using repeat commands to improve the running of a program.
- Use a variable to increase programming possibilities.
- Change an input to a program to achieve a different output.
- Use 'if' and 'then' commands to select an action.
- Use logical thinking, imagination and creativity to extend a program.



Apply programming skills to a new app, sticking with block-coding. Add points scoring and timers to games.



Create simple games on Microbits.

Sections of an **algorithm** can be **repeated** using a **forever loop**, the code must be inside this to be repeated.

Variables are **characteristics** which can change **value** during a code.

Input is a device which gives **information** to a computer or program, the **output** is something which feeds information out.

If and then **commands** can link multiple pieces of **code** – if ____ happens, then ____.

Information Technology

- Combine software (sound, image, movie, animation) use to accomplish a goal.
- Use text, photo, sound and video editing tools to refine my work.
- Use the skills that I have already developed to create content using unfamiliar technology.
- Use advanced searching tools to refine searches with quotations and settings that alter and filter given results.
- Recognise that there are multiple search engines which have different algorithms and set ups.
- Use a spreadsheet and database to collect and record data.
- Recognise and evaluate different types of information I find on the World Wide Web.
- Create a 3D structure using computer-aided design.



Combine typing, animation and shortcuts to improve presentation skills.



Create movie trailers using different forms of multimedia.



Explore search engines using advanced search tools.



Design 3D structures and print using a 3D printer (can be borrowed).



Create and store information using a database.

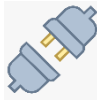
Children must have an **outcome** in mind when creating a presentation, with some understanding of **audience** and **purpose**.

It is important for children to have access a range of **editing** skills and time to make such changes to improve the overall **quality** of their work.

To **filter** the number of **responses** found on a **search engine**, we can use the **advanced search** feature.

Search engines, **ranking** system, search results.

	Digital Literacy	• Know how to present themselves safely online eg social media sites, online gaming (HE13) • Recognise the potential risks of providing personal information online. • Classify computer games and films, understanding the need for age restrictions. • Familiarise themselves with the term cyber bullying and will identify a range of strategies for dealing with this.	 KS2 scheme of work on Be Internet Legends.  Unplugged activities.	Personal information must be kept in a private domain otherwise there are many risks, including fraud and hacking. Age restrictions are in place to protect children and young people from unwanted and unexpected content. These are guidelines. Whilst using the internet, cyber-bullying can take place and is taken very seriously. In this instance, children should know how to report, block and potentially screenshot harmful and upsetting messages/content.
Year 6	Computer Science	• Create fully working games with an intended purpose and target audience in mind, making use of a range of variables. • Apply prior knowledge of block coding to new pieces of technology and software. • Use logical reasoning to detect and correct errors within an algorithms (debugging). • Recognise when the use of a variable is required to achieve a required output. • Evaluate the effectiveness of an algorithm whilst continually testing that algorithm.	 Create popular games using taught skills on Hopscotch.  Explore new coding possibilities using Microbits in the Digital Zone.	Children must think logically by making connections, predictions and knowledge of code to locate bugs and ways of fixing them. Variables are required when adding timers of scoring systems to your program as these are required to increase/decrease value over time. An algorithm requires constant testing to ensure that the outcome is met as expected and that the code performs effectively, without error.

	Information Technology	- Combine a range of media, recognising the contribution of each when achieving a particular outcome. - Evaluate the effectiveness of my own work with audience and purpose in mind. - Create high-quality presentations with real purpose and intent, including green-screening. - Select the most appropriate tools for presenting data, being able to interpret and interrogate the data being shown. - Have confidence in checking the reliability of a website. - Discuss copyright and acknowledge the sources of information that I find online.	 Combine all elements of multimedia to produce well-planned Keynote presentations.  Create Newsroom style clips using multimedia.  Create music digitally using layering.  Further use of Numbers to password protect databases and encouraging searching within.	When creating digital content, we must consider the audience (who is it for) and purpose (what is it for) to ensure high-quality. Different types of graphs, charts and tables have varying uses and can be used to present different types of data. Websites which display https are considered safe, whilst http addresses are not. Not everything we read online is accurate so we must be discerning when researching. It is good practise to locate information from multiple sources to check validity. Copyright considers who has the legal rights to access, save and edit content found online.
	Digital Literacy	- Know how to use digital devices, such as a mobile phone, safely and appropriately. - Understand the term 'grooming' and recognise ways of dealing with this. - Fully understand the term 'digital footprint', knowing that the sharing of some information is irreversible and can have consequences. - Critically examine what is presented to them in social media knowing why it's important to do so. - Know how and where to get help with issues online.	 KS2 scheme of work on Be Internet Legends.  Unplugged activities.	Grooming is when someone builds a relationship, trust and emotional connection with a child or young person so they can manipulate, exploit and abuse them. Anyone who accesses the internet has a digital footprint - a trail of data you create while using the Internet, including websites you visit, emails you send, and information you submit to online services.