

Computing Curriculum at Roundwood Primary School

Where we are going

You need to:

- Use technology safely, respectfully and responsibly. **(Responsibility and respect)**
- Select, use and have knowledge of a variety of software.
- Use search technologies effectively. **(Independence)**
- Recognise common uses of information technology beyond school.
- Understand computer networks, including the Internet.
- Use logical reasoning to explain how some simple algorithms work. **(Curiosity)**
- Design, write and debug programs that accomplish specific goals. **(Creativity)**

Who we are

We are living in a fast moving world where now computing is at the heart of. We know a high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world, and in a changing world.

Computing has deep links with mathematics, science, and design and technology, and Roundwood Primary School is surrounded by businesses using and developing these areas. Computing ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

We have discovered that as a community we are a generation that has many digital devices but we also recognise that pupils need to use this technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Buckingham is an affluent, expanding town that enables parents to provide opportunities and resources to their children.

Vocabulary

Debug, programs, control, variables, input/output, algorithms, networks, internet, software, technology, safety, digital, store, retrieve, logical, spreadsheets, logo, email, coding, touch typing, animation

RPS History Journey

Early Years

In Early years, children are introduced to technology through play as it is a natural beginning before learning from a more purposeful and directed approach. Children will enjoy various sources of technology in their play, to learn how to use it and to navigate their way around it before using it formally. This will support them in asking questions, making links and showing curiosity. Practitioners will be drawing children's attention to the technology around them in everyday life both inside school and out, to help them understand the importance of it. They will also provide a positive role model by showing children that adults use technology for their own purposes and by talking to the children about the value they place on this use. In this way children will see technology used for real purposes and will develop the understanding that technologies are tools to be used when they're needed and that they're not used just for the sake of it. They will develop a positive disposition towards technology and a motivation to use it both now and in the future.

In Year 1

Online Safety

Children can log in to Purple Mash using their own login. Children have created their own avatar and understand why they are used. Children can add their name to a picture they created on the computer. Children are beginning to develop an understanding of ownership of work online. Children can save work into the My Work folder in Purple Mash and understand that this is a private saving space just for their work. Children can find their saved work in the Online Work area of Purple Mash. Children can find messages that their teacher has left for them on Purple Mash. Children can search Purple Mash to find resources.

Grouping and sorting

Children can sort various items offline using a variety of criteria. Children have used Purple Mash activities to sort various items online using a variety of criteria.

Pictograms

Children can discuss and illustrate the transport used to travel to school. Children can contribute to the collection of class data. Children have used these illustrations to create a simple pictogram. Children can contribute to a class pictogram. Children can discuss what the pictogram shows. Children can collect data from rolling a die 20 times and recording the results. Children can represent the results as a pictogram.

Lego Builders

Children know that to achieve the effect they want when building something, they need to follow accurate instructions. Children know that by following the instructions correctly, they will get the correct result. Children know that an algorithm is a precise, step-by-step set of instructions used to solve a problem or achieve an objective. Children can follow instructions in a computer program. Children can explain the effect of carrying out a task with no instructions. Children know that computers need precise instructions to follow. Children know that an algorithm written for a computer to follow is called a program. Children understand how the order in which the steps of a recipe are presented affects the outcome. Children can organise instructions for a simple recipe. Children know that correcting errors in an algorithm or program is called 'debugging'.

Maze Explorer

Children know how to use the direction keys in 2Go to move forwards, backwards, left and right. Children know how to add a unit of measurement to the direction in 2Go Challenge 2. Children know how to undo their last move. Children know how to move their character back to the starting point. Children can use diagonal direction keys to move the characters in the right direction. Children know how to create a simple algorithm. Children know how to debug their algorithm. Children can use the additional direction keys to create a new algorithm. Children can challenge themselves by using the longer algorithm to complete challenges. Children can change the background images in their chosen challenge and save their new challenge.

Animated Stories

Children know the difference between a traditional book and an e-book. Children can use the different drawing tools to create a picture on the page. Children can add text to a page and change the colour, font and size of the text. Children can open previously saved work. Children can add an animation to a page. Children can play the pages created. Children can save changes and overwrite the file. Children can add a sound to the page. Children can add voice recording to the page. Children can create music for a page.

In Year 2

Online Safety

Children can use the search facility to refine searches on Purple Mash by year group and subject. Children can share the work they have created to a display board. Children understand that the teacher approves work before it is displayed. Children are beginning to understand how things can be shared electronically for others to see both on Purple Mash and the Internet.

Coding

Children can explain that an algorithm is a set of instructions. Children can describe the algorithms they created. Children can explain that for the computer to make something happen, it needs to follow clear instructions. Children know how the turtle object moves. Children understand how to use the repeat command with an object. Children can include a button in their programs. Children have contrasted the effect of the repeat command used with turtle objects to use of the repeat command with a character object. Children know that the turtle and character objects have different properties and move in different ways. They can begin to make choices about which object type to use. Children are beginning to understand that the repeat and timer commands both make objects repeat actions but function differently and the type of object can affect which is the best command to use.

Spreadsheets

Children can explain what rows and columns are in a spreadsheet. Children can open, save and edit a spreadsheet. Children can add images from the image toolbox and allocate them a value. Children can add the count tool to count items. Children can use copying and pasting to help make spreadsheets. Children can use tools in a spreadsheet to automatically total rows and columns. Children can use a spreadsheet to solve a mathematical puzzle. Children can use images in a spreadsheet. Children can work out how much they need to pay using coins by using a spreadsheet to help calculate.

Questioning

Children understand that the information on pictograms cannot be used to answer more complicated questions. Children have used a range of yes/no questions to separate different items. Children understand what is meant by a binary tree. Children have designed a binary tree to sort pictures of children. Children understand that questions are limited to 'yes' and 'no' in a binary tree. Children understand that the user cannot use 2Question to find out answers to more complicated questions. Children have matched the 2Simple Avatar pictures to names using a binary tree.

Effective Searching

Children can recall the meaning of key Internet terms. Children have completed a quiz about the Internet. Children can identify the basic parts of a web search engine search page. Children have learnt to read a web search results page. Children can search for answers to a quiz on the Internet. Children have created a leaflet to consolidate knowledge of effective Internet searching.

Creating Pictures

Children can explain what is meant by impressionist art. Children can use 2Paint a Picture to create art based upon this style. Children can explain what pointillism is. Children can use 2Paint a Picture to create art based upon this style. Children can describe the main features of art that uses repeating patterns. Children can use 2Paint a Picture to create art by repeating patterns in a variety of ways. Children can combine more than one effect in 2Paint a Picture to enhance patterns. Children can describe the main features of Piet Mondrian's work. Children can use 2Paint a Picture to art based upon his style.

In Year 3

Online Safety

Children understand what makes a good password for use on the Internet. Children are beginning to realise the outcomes of not keeping passwords safe. Children understand that some information held on websites may not be accurate or true. Children can identify some physical and emotional effects of playing/watching inappropriate content/games.

Coding

Children can create a design that represents a sequential algorithm. Children can use a flowchart design to create the code. Children can explain what Object, Action, Output, Control and Event are in computer programming.

Spreadsheet

Children can create a table of data on a spreadsheet. Children can use a spreadsheet program to automatically create charts and graphs from data. Children can use the 'more than', 'less than' and 'equals' tools to compare different numbers and help to work out solutions to calculations. Children can use the 'spin' tool to count through times tables. Children can describe a cell location in a spreadsheet using the notation of a letter for the column followed by a number for the row. Children can find specified locations in a spreadsheet.

Touch Typing

To understand the names of the fingers. To understand what is meant by – home, bottom, and top rows. Developed ability to touch type the home, bottom, and top rows. Children can use two hands to type the letters on the keyboard. Children can touch type using the left hand. Children can touch type using the right hand.

Email

Children can list a range of different ways to communicate. Children can use 2Connect to highlight the strengths and weaknesses of each method. Children can open an email and respond to it. Children have sent emails to other Children in the class. Children have written rules about how to stay safe using email. Children have contributed to classmates' rules. Children can attach work to an email. Children can read and respond to a series of email communications.

Branching Database

Children understand how YES/NO questions are structured and answered. Children have used YES/NO questioning to play a simple game with a friend. Children have contributed to a class branching database

about fruit. Children have completed a branching database about vegetables. Children can choose a suitable topic for a branching database. Children can select and save appropriate images.

In Year 4

Online Safety

Children know that security symbols such as a padlock protect their identity online. Children know the meaning of the term 'phishing' and are aware of the existence of scam websites. Children can explain what a digital footprint is and how it relates to identity theft. Children can give examples of things that they would not want to be in their digital footprint. Children can identify possible risks of installing free and paid for software. Children know that malware is software that is specifically designed to disrupt, damage, or gain access to a computer. Children know what a computer virus is.

Coding

Children can use sketching to design a program and reflect upon their design. Children can create code that conforms to their design. Children can create an 'if/else' statement. Children understand what a variable is in programming. Children can set/change the variable values appropriately. Children can interpret a flowchart that depicts an if/else flowchart. Children can show how an object repeats an action and explain how they caused it to do so. Children can make an object respond to user keyboard input.

Spreadsheets

Children can use the number formatting tools within 2Calculate to appropriately format numbers. Children can add a formula to a cell to automatically make a calculation in that cell. Children can use the timer, random number and spin button tools. Children can combine tools to make fun ways to explore number. Children can use a series of data in a spreadsheet to create a line graph. Children can use a line graph to find out when the temperature in the playground will reach 20°C. Children can make practical use of a spreadsheet to help them plan actions. Children can use the currency formatting in 2Calculate.

Writing for different audiences

Children have looked at and discussed a variety of written material where the font size and type are tailored to the purpose of the text. Children have used text formatting to make a piece of writing fit for its audience and purpose. Children have role-played the job of a journalist in a newsroom. Children have interpreted a variety of incoming communications and used these to build up the details of a story. Children have used the incoming information to write their own newspaper report.

Using Logo

Children know what the common instructions are in Logo and how to type them. Children can follow simple Logo instructions to create shapes on paper. Children can follow simple instructions to create shapes in Logo. Children can create Logo instructions to draw patterns of increasing complexity. Children understand the pu and pd commands. Children can write Logo instructions for a word of four letters. Children can follow Logo code to predict the outcome. Children can create shapes using the Repeat function.

Animation

Children have put together a simple animation using paper to create a flick book. Children understand animation frames. Children have made a simple animation using 2Animate. Children know what the Onion Skin tool does in animation. Children can use the Onion Skin tool to create an animated image. Children know what 'stop motion' animation is and how it is created. Children have used ideas from existing 'stop motion' films to recreate their own animation.

In Year 5

Online Safety

Children think critically about what they share online, even when asked by a usually reliable person to share something. Children have clear ideas about good passwords. Children can see how they can use images and digital technology to create effects not possible without technology. Children have experienced how image manipulation could be used to upset them or others even using simple, freely available tools and little specialist knowledge.

Coding

Children can use sketching to design a program and reflect upon their design. Children can create code that conforms to their design. Children can explain how their program simulates a physical system. Children can select the relevant features of a situation to incorporate into their simulation by using decomposition and abstraction. Children can reflect upon the effectiveness of their simulation. Children can explain what a variable is in programming. Children can set/change the variable values appropriately. Children know some ways that text variables can be used in coding.

Spreadsheets

Children can create a formula in a spreadsheet to convert m to cm. Children can apply this to creating a spreadsheet that converts miles to km and vice versa. Children can use a spreadsheet to work out which letters appear most often. Children can use the 'how many' tool. Children can use a spreadsheet to work out the area and perimeter of rectangles. Children can use these calculations to solve a real-life problem. Children can create simple formulae that use different variables. Children can create a formula that will work out how many days there are in x number of weeks or years.

Database

Children understand the different ways to search a database. Children can search a database to answer questions correctly. Children have designed an avatar for a class database. Children have successfully entered information into a class database. Children can create their own database on a chosen topic. Children can add records to their database. Children know what a database field is and can correctly add field information. Children understand how to word questions so that they can be effectively answered using a search of their database.

Game Creator

Children can review and analyse a computer game. Children can describe some of the elements that make a successful game. Children can begin the process of designing their own game. Children can design the setting for their game so that it fits with the selected theme. Children can upload images or use the drawing tools to create the walls, floor, and roof. Children can design characters for their game. Children can decide upon, and change, the animations and sounds that the characters make. Children can make their game more unique by selecting the appropriate options to maximise the playability. Children can write informative instructions for their game so that other people can play it.

3D Modelling

Children know what the 2Design and Make tool is for. Children have explored the different viewpoints in 2Design and Make whilst designing a building. Children have adapted one of the vehicle models by moving the points to alter the shape of the vehicle while still maintaining its form. Children have explored how to edit the polygon 3D models to design a 3D model for a purpose.

In Year 6

Online Safety

Children have used the example game and further research to refresh their memories about risks online including sharing location, secure websites, spoof websites, phishing and other email scams. Children have used the example game and further research to refresh their memories about the steps they can take to protect themselves including protecting their digital footprint, where to go for help, smart rules and security software. Children understand how what they share impacts upon themselves and upon others in the long-term. Children know about the consequences of promoting inappropriate content online and how to put a stop to such behaviour when they experience it or witness it as a bystander. Children can give reasons for limiting screen time. Children can talk about the positives and negative aspects of technology and balance these opposing views.

Coding

Children can plan a program before coding to anticipate the variables that will be required to achieve the desired effect. Children can follow through plans to create the program. Children can debug when things do not run as expected. Children can explain what functions are and how they can be created and labelled in 2Code. Children can explain how to move code from one tab to another in 2Code. Children can explain how they organised code in a program into functions to make it easier to read. Children can code programs that take text input from the user and use this in the program. Children can attribute variables to user input. Children are aware of the need to code for all possibilities when using user input.

Spreadsheets

Children can create a spreadsheet to answer a mathematical question relating to probability. Children can take copy and paste shortcuts. Children can problem solve using the count tool. Children can create a machine to help work out the price of different items in a sale. Children can use the formula wizard to create formulae. Children can use a spreadsheet to solve a problem. Children can use a spreadsheet to model a real-life situation and come up with solutions. Children can make practical use of a spreadsheet to help plan actions. Children can use a spreadsheet to model a real-life situation and come up with solutions that can be applied to real life.

Blogging

Children understand how a blog can be used as an informative text. Children understand the key features of a blog. Children can work collaboratively to plan a blog. Children can create a blog with a specific purpose. Children understand that the way in which information is presented has an impact upon the audience. Children understand that blogs need to be updated regularly to maintain the audience's interest and engagement. Children can post comments and blog posts to an existing class blog. Children understand the approval process that their posts go through and demonstrate an awareness of the issues surrounding inappropriate posts and cyberbullying.

Text Adventures

Children can describe what a text adventure is. Children can map out a story-based text adventure. Children can use 2Connect to record their ideas. Extension: Children can turn a simple story with 2 or 3 levels of decision making into a logical design. Children can use the full functionality of 2Create a Story Adventure mode to create, test and debug using their plan. Children can split their adventure-game design into appropriate sections to facilitate creating it. Children can map out an existing text adventure. Children can contrast a map-based game with a sequential story-based game.

Networks

Children know the difference between the World Wide Web and the internet. Children know about their school network. Extension: Children can explain the differences between more than two network types such as: LAN, WAN, WLAN and SAN. Children have researched and found out about Tim Berners-Lee. Children have considered some of the major changes in technology which have taken place during their lifetime and the lifetime of their teacher/another adult.

Links with other subjects

Geography – using the internet to research and communicate with other areas of the world.

Mathematics – looking at and interpreting visual and numerical data to help children understand mathematical workings.

Art – looking at photographs and paintings to help children and using graphic design.

Design Technology – looking at architectural drawings to understand and graphic design.

Science-using, storing and interpreting data.

As a Design Technologist leaving RPS

I will be able to:

- design, write and debug programs that accomplish specific goals
- use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- use logical reasoning to explain how some simple algorithms work
- understand computer networks including the internet
- use search technologies effectively, appreciate how results are selected and ranked
- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs
- use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Memory makers at RPS

I will have experienced

- I will be able to send and receive an e-mail.
- I will get the opportunity to write my own blog.
- I will be supported in lessons by technology that enhances my learning.
- I will benefit from having an online learning platform for phonics, reading and maths.

Because I went to RPS

- I can use technology safely, respectfully and responsibly.
- I can use a wide range of computer programs.
- I can use the internet to effectively to search for what I want.