

Winterton Primary School & Nursery Computing Progression



This document demonstrates the progression in knowledge, skills and vocabulary in Science from Year 1 to Year 6.

KS1 Computing (Year 1-2)

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Computer systems and networks - Technology around us	Creating media - Digital painting	Creating media - Digital writing	Data and information - Grouping data	Programming - Moving a robot	Programming - Introduction to animation
Computing systems and networks - IT around us	Creating media - Digital photography	Creating media - Making music	Data and information - Pictograms	Programming - Robot algorithms	Programming - An introduction to quizzes

This is a two-year rolling plan working from Year A in the academic year 2021 – 2022.

Year A	Autumn 1: Computer systems and networks - Technology around us	Autumn 2: Creating media - Digital painting
	<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> • Technology is now part of our day to day life. Technology can be a television, vehicles, computer systems and games. The main parts of a computer are: a mouse, keyboard, monitor, charger. • A computer stores information in files. A computer can be used to create and edit files using Microsoft Word. Files that are created can be saved to edit or continue working on at a later date. • A mouse can be used to control the cursor; a mouse or keypad can be used for right and left clicked. • A keyboard is used for typing; there are arrow keys, space keys and delete keys for other functions. • Computers and laptops have user accounts we need usernames and passwords to sign into. 	<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> • Technology can be used to create art. There are lots of different programmes we can use to draw on a computer or laptop. • Software can be used to draw shapes as well as freehand lines and brushstrokes. • Brushstroke size can be altered to suit purpose; colour and style can also be changed. • Images can be erased, edited and saved. • Shapes can be drawn with outlines or filled using different colours. <p>Skills children will gain:</p> <ul style="list-style-type: none"> • Create lines using freehand drawing software • Draw and fill shapes using different colours. • Alter the colour and brush size of tools using freehand drawing software

<ul style="list-style-type: none"> • Open and save documents using a word processor. • Recognise and use keys on a keyboard. • Enter text into a computer using letter, number and space keys. • Use backspace to remove text. • Type using capital letters. • Identify and use features of the toolbar. <p>Children will build on this knowledge in:</p> <ul style="list-style-type: none"> • KS2 where they will continue to consolidate and learn new skills for word processing. <p>Children learn the following vocabulary: technology, documents, keyboard, toolbar, word processor, alphabet, shift, bold, italics, underlined, undo, space, method, saved, backspace.</p>	<ul style="list-style-type: none"> • Match pictures and suitable labels. • Count and group objects • Describe the properties of objects. • Group similar objects based on their properties. • Compare data presented in groups. <p>Children will build on this knowledge in:</p> <ul style="list-style-type: none"> • KS2 where they will use graphs, spreadsheets and databases to sort and order data. <p>Children learn the following vocabulary: objects, data, compare, label, feature, shape, colour, organize, count, describe, similar, different, properties, group, presented,</p>
<p align="center">Summer 1: Programming - Moving a robot</p>	<p align="center">Summer 2: Programming - Introduction to animation</p>
<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> • We can use computing to program robots to move in different directions. Robots have buttons at the top and a switch to turn them on or off. • Robots will only follow a clear, fixed command in a precise and repeatable way. They will only do what you ask. • A sequence is a pattern or combination of commands that will create an outcome. • If a command does not run as expected, it needs debugging. These are human errors which need to be programmed in the correct way. <p>Skills children will gain:</p> <ul style="list-style-type: none"> • Predict the outcome of a command. • Match the command and outcome. • Run a range of commands using a robot. • Plan and write commands to suit a purpose. • Identify the errors in commands and debug them. <p>Children will build on this knowledge in:</p>	<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> • Robots can be programmed to complete commands. Sprites, in Scratch, can be programmed to complete commands in the same way. Each Sprite has its own programming area where it must be programmed individually; in comparison, the robots also all needed programming separately. • Opposed to buttons, Scratch uses blocks which are dragged and ordered in the correct sequence for a command. • In Scratch, coding begins with a Start command and will finish on an End command. <p>Skills children will gain:</p> <ul style="list-style-type: none"> • Choose commands for given purposes. • Use blocks in Scratch to complete simple commands. • Predict how a Sprite will move based on a set of commands. • Plan a set of commands to move a Sprite. • Complete, test and debug a command to move a Sprite. <p>Children will build on this knowledge in:</p>

<ul style="list-style-type: none"> • KS2 where they will use a range of programming software. <p>Children learn the following vocabulary: buttons, commands, program, switch, robot, sequence, debugging, pattern, combination, route, purpose</p>	<ul style="list-style-type: none"> • KS2 where they will continue to develop their skills using programming software such as Scratch. <p>Children learn the following vocabulary: sprite, command, debug, blocks, algorithm, value, repeat, sequence, Start, End</p>
--	--

Year B	Autumn 1: Computing systems and networks - IT around us	Autumn 2: Creating media - Digital photography
	<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> • IT benefits society in places such as shops, libraries and hospitals. • IT is not only confined to computers it can be: barcode scanners, tills, chip and pin readers, traffic lights and crossing signals. • IT can be connected: a computer can be connected to a printer, or in the classroom an interactive whiteboard. • It is important to balance use of IT with a healthy lifestyle. A digital 5 a day is where we can connect, be active, get creative, be mindful and give to others. <p>Skills children will gain:</p> <ul style="list-style-type: none"> • Identify devices which are computers. • Identify examples of IT beyond the classroom. • Explain how IT benefits the wider world. • Understand the uses of IT outside of education. • Understand the responsibility associated with technology. <p>Children will build on this knowledge in:</p> <ul style="list-style-type: none"> • KS2 where they will continue to learn about online safety, the pros and cons of technology and the importance of balancing online content with other lifestyle choices. <p>Children learn the following vocabulary:</p>	<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> • Many devices, not just cameras, can be used to take photographs. Many devices such as laptops and phones have cameras built in. • A photograph can be taken in either portrait or landscape. Some compositions are more suited to a landscape or portrait image e.g., a photo of a person would be taken in portrait mode. • Light and focus can affect good photograph composition. Flash and artificial light can also affect a photo. • There are tools within cameras to enhance the photographs including autofocus and auto flash. • Images taken on cameras can be edited using software. Editing options include: crop, saturation, colour changing effects. • Images can be changed for a purpose: not all images are real. Images can be altered for specific effect e.g. to create fictional artwork. <p>Skills children will gain:</p> <ul style="list-style-type: none"> • Take high quality photos in different orientations. • Experiment with light and focus when taking photographs. • Improve a photograph by retaking it. • Use editing software to crop compositions. • Use editing software to alter colouration of a photo. • Identify photos which are real or edited.

<ul style="list-style-type: none"> IT, society, benefits, connected, together, balance, mindful, interactive, education, responsibility 	<p>Children will build on this knowledge in:</p> <ul style="list-style-type: none"> KS2 where they will create vector drawings, take and edit photos and videos. <p>Children learn the following vocabulary:</p> <ul style="list-style-type: none"> Photograph, device, camera, portrait, landscape, alter, quality, orientation, composition, light, focus, autofocus, flash, edit, crop, saturation, colour, alter, fiction, edited,
<p>Spring 1: Creating Media – Making Music</p>	<p>Spring 2: Data and information - Pictograms</p>
<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> Music can evoke different feelings and emotions. Different people can have different responses to music. Music consists of rhythm patterns. Music is a sequence of notes. Pitch is how high or low a sound is. Music is created and played by humans; music can be created digitally. Chrome Music Lab can be used to digitally create music without instruments. <p>Skills children will gain:</p> <ul style="list-style-type: none"> Describe music using adjectives and opinion. Recognise rhythm as a pattern Identify how music can express an emotion Experiment with pitch to create a piece of music Create and refine musical patterns Retrieve and review a piece of work <p>Children will build on this knowledge in:</p> <ul style="list-style-type: none"> KS2 where they will use Scratch to program sounds. <p>Children learn the following vocabulary: music, feelings, emotions, responses, consists, rhythm, pattern, sequence, notes, pitch, low, high, digitally, instruments,</p>	<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> Pictograms are a way to display data. They can be used to effectively display and count data using pictures or symbols. Pictograms can have keys to show what a symbol represents. Often the symbols represent one, but they can represent two or more. Pictograms can be constructed using computer software. Objects can be grouped by their properties or attributes e.g. colour, shape, size. Data can be collected in a tally chart. A tally chart groups data in fives to make it easy to count. Block diagrams can also be used to represent data sets. Some data should not be shared. For example, we should not share out full names, addresses, passwords or other personal data. <p>Skills children will gain:</p> <ul style="list-style-type: none"> Collect and represent data in a tally chart. Use attributes to collect and sort data. Use software to present data in a pictogram. Ask and answer questions about data presented in a pictogram. Construct block charts using computing software. Understand examples of data which can and cannot be shared. <p>Children will build on this knowledge in:</p>

	<ul style="list-style-type: none"> • KS2 where they will develop their skills in data software using pictograms and other charts using software including Excel. <p>Children learn the following vocabulary:</p> <ul style="list-style-type: none"> • Data, tally, collect, software, pictogram, key, attribute, object, shared, block diagrams, properties, symbol, present,
Summer 1: Programming Robot Algorithms	Summer 2: Programming – Introduction to quizzes
<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> • To program a robot, instructions need to be given clearly and precisely. A robot will only follow the commands it is given. • If a program does not follow the expected commands it needs debugging. • We can use computing to program robots to move in different directions. Robots have buttons at the top and a switch to turn them on or off. • The same commands written in different orders will produce different outcomes. <p>Skills children will gain:</p> <ul style="list-style-type: none"> • Write and follow easily sequenced instructions • Program a robot to follow a sequence of instructions • Make predictions about the outcome of a set of instructions • Design and create a mat for a robot • Test and debug a set of instructions for a robot <p>Children will build on this knowledge in:</p> <ul style="list-style-type: none"> • KS2 where they will use a range of programming software. <p>Children learn the following vocabulary:</p> <ul style="list-style-type: none"> • buttons, commands, program, switch, robot, sequence, debugging, pattern, combination, route, purpose, order, compare, follow, 	<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> • Scratch Jr can be used to program Sprites to follow commands. • Scratch Jr uses blocks for commands. Sequences need being with a start command. Different blocks have different purposes and outcomes. • If a sequence of coding does not work, it needs debugging to run smoothly. • A quiz sorts information to locate data stored in technology using questions. <p>Skills children will gain:</p> <ul style="list-style-type: none"> • Identify the start and end of a piece of code. • Predict the outcome of a sequence of commands. • Match sequences and their commands. • Identify the blocks needed for different commands. • Build sequences for given commands. • Choose and use backgrounds. • Design a quiz project using Scratch Jr. <p>Children will build on this knowledge in:</p> <ul style="list-style-type: none"> • KS2 where they will write further programmes and quizzes using Scratch Jr and Scratch. <p>Children learn the following vocabulary:</p> <ul style="list-style-type: none"> • sprite, command, debug, blocks, algorithm, value, repeat, sequence, Start, End

KS2 Computing (Year 3-6)

This is a four-year rolling plan working from Year A in the academic year 2021 – 2022.

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Desktop Publishing – Word	Scratch Programming – Loop Repetition	Vector Drawing	Branching databases	<i>Online Safety</i>	Video editing
Excel – drawing graphs and charts	Scratch Programming – Shape Repetition	<i>Online Safety</i>	Scratch Programming – Events and Actions	The Internet	3D modelling
Scratch Programming – sequencing sounds	Flat-file databases	Programming - Selection	<i>Online Safety</i>	Photo editing	Desktop Publishing – PowerPoint
Scratch Programming – variables in games	Excel – writing formula	Desktop Publishing - Word	Stop Frame Animation	<i>Online Safety</i>	Creating Media – audio editing

Year A	Autumn 1: Desktop Publishing - Word	Autumn 2: Scratch Programming – Loop Repetition
	<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> • Desktop publishing is creating a document using both text and images such as invitations, magazines or newspapers using computer software. It is called desktop publishing as it was first completed on desktop computers. • Font is the style of text that has been used to create a document. Font can be different colours, styles and sizes. Font can be bold, underlined or in italics. We can change the font style and size, we can highlight font and change its colour. • When you create a piece of work, you can choose which way round the page goes. We call this the page orientation. The page orientation will depend on the audience and purpose. Work can be portrait or landscape. • Place holders are the boxes that hold the place of text or images in a document. Placeholders are helpful because you can design your page layout before thinking about adding the content. • A template is a document that has already been laid out in a certain way using placeholders. It might have columns for text or spaces for pictures. Templates can be helpful because they give you different ready-made layouts to choose from. Miss Bane uses templates every day for her morning slides – it is quicker than making a new one each day. Templates also mean you can make small changes (like the date or lesson) without having to start again from scratch. Microsoft Word comes with different templates including one for a recipe. • In Word, we can add text using textboxes and use shapes to draw placeholders for where pictures will go using the Insert ribbon. • We can change the weight of textboxes which changes the thickness of the lines. We can also change the colour and style. We can fill textboxes and shapes with colour and then alter the outline colour too. <p>Skills children will gain:</p> <ul style="list-style-type: none"> • Select appropriate font style, colour and size for purpose 	<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> • Instructions can be repeated to make them more effective. In coding this can be done using a loop. Rather than code move 50 steps, turn 90 degrees, move 50 steps, turn 90 degrees, move 50 steps, turn 90 degrees, we can code repeat 4(move 50 steps, turn 90 degrees). This can be done in both Logo and Scratch. <div data-bbox="1205 395 1809 657" data-label="Image"> </div> <ul style="list-style-type: none"> • We can also use infinite loops. In an infinite loop, the command is repeated over and over again without an end point. In scratch this is called the repeat forever block. • Animations can turn left or right, change costumes, move, rotate or getting bigger / smaller. • In Scratch, the show and hide blocks can be used to show or hide sprites for a duration of time. • In Scratch, we can add and change backgrounds. • Checking algorithms is essential to check they play properly and there are no bugs within the coding blocks. <p>Skills children will gain:</p> <ul style="list-style-type: none"> • Use finite loops to create shapes. • Identify finite and infinite loops in coding. • Use infinite loops to code sprites. • Describe the movement a code will produce. • Animate shapes and words using finite and infinite loops • Modify a coded game using finite and infinite loops in Scratch • Design a coded game using finite and infinite loops in Scratch

<ul style="list-style-type: none"> • Consider the layout of a document using placeholders • Use a template to edit and create digital media • Create a template for a magazine cover using text boxes • Add text and colour to a magazine template • Add images to a magazine template • Use a template effectively to create a new document <p>Children will build on knowledge from:</p> <ul style="list-style-type: none"> • KS1 where they will begin to create text using Microsoft Word. <p>Children will build on this knowledge in:</p> <ul style="list-style-type: none"> • KS2 where they will develop their desktop publishing skills in Word and Powerpoint. <p>Children learn the following vocabulary:</p> <ul style="list-style-type: none"> • Weight, textbox, shape, outline, fill, ribbon, insert, placeholder, template, orientation, landscape, portrait, font, style, size, colour, columns, software, desktop, publish, 	<ul style="list-style-type: none"> • Create a coded game using finite and infinite loops in Scratch <p>Children will build on knowledge from:</p> <ul style="list-style-type: none"> • KS1 where they will be introduced to programming simple algorithms for coding. <p>Children will build on this knowledge in:</p> <ul style="list-style-type: none"> • KS2 where they will use repetition further to design games using Scratch <p>Children learn the following vocabulary:</p> <ul style="list-style-type: none"> • Code, sprite, finite, infinite, loop, background, repetition, blocks, bug, debug, algorithm, effective, degrees, command,
Spring 1: Vector Drawing	Spring 2: Branching Databases
<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> • A vector drawing is a drawing that is made on the computer, made using lines and shapes and made by putting lines and shapes together to form a complete image. • When completing a vector drawing, the chequered part of the page is called the drawing canvas. When you create vector drawings, each shape is called an object. We can use the undo and redo buttons if we make a mistake or want to change something. We can fill a shape with a colour. • To create bigger and better vector drawings, we can layer our shapes. To do this we need to be able to choose which shapes are at the front and which are at the back. We can also use the copy and paste function to quickly and easily create many of the same shape. We can rotate shapes too using the circular handle and drag the shape. 	<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> • Some questions are open-ended. You can give more detail or an opinion. Other questions are factual and can only be answered using yes or no. An attribute is another way to say property. • We can use questions to separate objects into groups based on their attributes. This creates a branching system to categorise. • We can use online software to create a branching database using closed questions. • It is important to consider the order of the questions when creating a branching database; you ideally want the questions to split the groups equally each time until they have been separated. • When branching databses are complete, we can write questions and answer questions using the information displayed.

- We can use the zoom tool to add detail to drawings. We can use alignment guides to help us align objects in the centre or edge of another object.
- We can change the border weight, style and colour of an object.
- Like templates in desktop publishing, we can use existing vector drawings to create new ones without starting from scratch. By transforming shape, rotation, resizing, alignment, colour and borders we can change one vector drawing into another.

Skills children will gain:

- Identify and use drawing tools to produce different objects.
- Use copy and paste to create multiple identify objects
- Choose shapes to be in the front or background of a vector drawing
- Make effective drawings by using the zoom function
- Make effective drawings using the alignment guides
- Transform one vector drawing into another effectively
- Use layering to create vector drawings
- Group and duplicate objects to effectively use vector drawing software

Children will build on knowledge from:

- KS1 where they will being to learn how to create digital media including painting, writing, photography and music.

Children will build on this knowledge in:

- KS2 where they will use templates in Desktop Publishing, learn to edit videos and photos.

Children learn the following vocabulary:

- Vector, fill, draw, shape, object, background, foreground, multiple, effectively, alignment, zoom, transform, rotate, weight, colour, drawing canvas, copy, paste, function, tool, undo, redo

- We can also use software to display information as a pictogram using images to show frequency. There is certain information which is best presented in a pictogram and information that is more suited to a branching database.
- We can also use Scratch to create databases. We can script a conversation to ask and answer questions and sort information.

Skills children will gain:

- Write questions to group objects by their attributes.
- Identify and write closed and open questions.
- Use closed questions to create a branching database.
- Use online software to create a branching database.
- Order questions logically to create a branching database.
- Compare branching databases and make improvements
- Ask and answer questions about branching databases.
- Identify the best style of chart to present information on.
- Script conversations in Scratch using closed questions.

Children will build on knowledge from:

- KS1 where they will use computer software to create pictograms.

Children will build on this knowledge in:

- KS2 where they will develop their skills coding in Scratch and also study flat-file databases.

Children learn the following vocabulary:

- Databases, open questions, closed questions, attributes, characteristics, branching database, logically, pictogram, script

Summer 1: Online Safety – Sharing Information

Knowledge children will learn:

- Being online and access to the internet is a fantastic resource for so much; however, we need to keep safe and be sensible and respectful at all times. Once something is on the internet, it is very difficult – if not impossible – for it to be permanently removed. We shouldn't share personal information when using the internet, online gaming or apps.
- Passwords keep other people from seeing your private information on the Internet. For example, tell students that passwords allow them to save their points after playing an online game. When they're older, they will use passwords to do many things, such as keep track of their money or shop online.
- Passwords should be 8 or more characters long, including letters, numbers and symbols, be changed every 6 months, be given to to your parent or carer and be something you can remember.
- Passwords shouldn't be a dictionary word, have private information in, use your nickname, use your phone number, shared with friends.
- We can check the strength of a password at <https://howsecureismypassword.net>

Skills children will gain:

- Identify the features of a strong password.
- Understand what a password should not include.
- Design a strong and secure password.
- Explain things which should not be shared online.

Children will build on knowledge from:

- KS1 where they will learn about staying safe online through computing topics, PSHE and assembly.

Children will build on this knowledge in:

- KS2 where they will routinely, once a year, revise the concepts of online safety; furthermore, the topic will be covered in assemblies

Summer 2: Video editing

Knowledge children will learn:

- When recording video we can use different framing: close up, mid range, long shot. We can also use filming techniques such as moving subjects, side by side, high, low or normal angled shots. For filming quiet volume, we want to consider the distance from the sound source to the recording device.
- A storyboard can be used in video production to plan. Each section will include an image/sketch of what the scene will look like and notes explaining the content, audio, frame style.
- When filming there are different techniques we can use. We can use static camera filming where the camera is in a fixed position. Examples of this are weather reporters or newsreaders. Another technique is zoom. This allows for close up video so we can see the subject in detail; however, using too much zoom may mean the subject is blurry. Another technique is pan and tilt. To pan, the camera position is fixed but is able to rotate from side to side. To tilt, the camera position is fixed but the camera can move up and down.

Skills children will gain:

- Identify the different types of framing which can be used in video recording.
- Select the appropriate type of framing for given scenarios.
- Use a storyboard to plan a sequence of filming
- Use recording equipment to film examples of different frames
- Use recording equipment to film a sequence using different frames
- Identify uses for using pan and tilt.
- Film sequences using pan and tilt.
- Combine their filming skills to create, edit and finalise a short video.

Children will build on knowledge from:

- KS1 where they will begin to edit media using software.

Children will build on this knowledge in:

and during PSHE units.


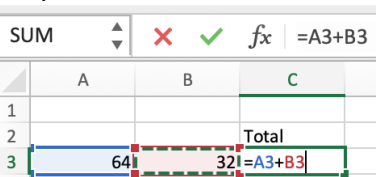
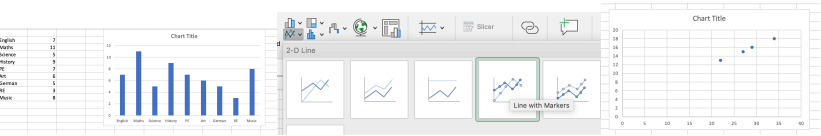
Children learn the following vocabulary:

- Password, strength, symbols, secure, share, private, online, gaming, digital, internet

- KS2 where they will use video editing in a range of subjects to produce short films.

Children learn the following vocabulary:

- close up, mid range, long shot, pan, tilt, moving subjects, side by side, high, low or normal angled shots, fixed position, tripod, storyboard

Year B	Autumn 1: Excel – Drawing Charts and Graphs	Autumn 2: Scratch Programming – Shape Repetition
	<p>Knowledge children will learn:</p> <ul style="list-style-type: none">• Excel can be used to construct different types of chart. We can use the table design feature to change the colours.  <ul style="list-style-type: none">• Data can also be sorted into alphabetical or ascending or descending order.• We can use Excel to complete addition and subtraction problems using simple cell codes.  <ul style="list-style-type: none">• Excel code can be manipulated to add multiple numbers at once using the SUM function. Numbers can also be multiplied and divided using Excel.• We can use Excel to draw bar charts, scatter graphs and line graphs using data completed in a table.  <p>Skills children will gain:</p>	<p>Knowledge children will learn:</p> <ul style="list-style-type: none">• An algorithm is an ordered set of precise instructions.• Coding can be used to draw shapes and routes using Logo. We call these instructions commands.• Logo has an interface with a drawing box, a turtle and a command box. To code we use fd and bk to instruct the turtle to move forward and backwards. When we want our turtle to turn, we must turn him using an angle. To turn a quarter turn right we would instruct rt 90. To clear the screen we use cs.• We can use pu and pd to put the turtle's pen up or down. This means, when the pen is up, that we can move the turtle without drawing.• We can code a longer sequence so our turtle does more than one thing at a time, e.g. fd 100 rt 90 fd 100.• If a code doesn't work, or doesn't draw what we want, we say there is a bug. To fix it, we say we are debugging.• Repeat means to do or say something again. We can use the repeat function repeat X [...] to command the turtle to do more than one thing at a time.• The turtle can draw in 15 different colours. The command for changing the pen's colour is setcolour followed by the colour's number.• The width of the pen can also be changed. It is standard to be on width of 1 point but can be changed to become wider using the code setwidth X. The larger the number, the thicker the line.

- Construct tables using Excel.
- Use the table design feature to choose colours and font stylings.
- Use Excel to complete addition and subtraction.
- Use the SUM function to add multiple numbers at once.
- Construct bar charts using Excel.
- Construct line graphs using Excel.
- Construct scatter graphs and identify trend lines using Excel.

Children will build on knowledge from:

- KS1 where they will begin to familiarise themselves with Microsoft software and coding programmes.

Children will build on this knowledge in:

- KS2 where they will continue to develop their skills in Excel.

Children learn the following vocabulary:

- Table, columns, formula, ascending, descending, cell, sum, function, code, construct, draw, bar chart, ribbon, line graph, data, scatter diagram, trend line, line of best fit

Skills children will gain:

- Identify what Logo codes will draw.
- Use Logo commands to write simple codes
- Identify the bugs in codes.
- Annotate drawings with Logo codes.
- Draw polygons using repeat coding.
- Use coding to predict what shapes will be drawn.
- Use coding to change the colour of drawings.
- Use coding to change the turtle pen’s width.

Children will build on knowledge from:

- KS1 where they will use simple coding to move a robot.

Children will build on this knowledge in:

- KS2 where they will develop their skills in code writing and algorithms though a number of units using different coding programs.

Children learn the following vocabulary:

- Algorithm, instruction, command, logo, turtle, annotate, polygons, interface, code, sequence, repeat, loop, colour, width, bugs, debug, brackets, pen

Spring 1: Online Safety - Communication

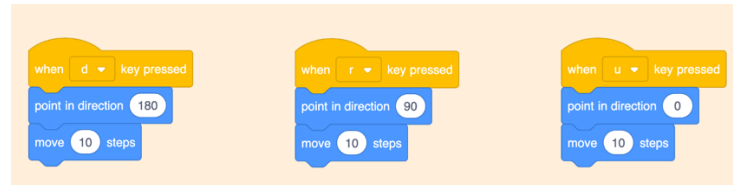
Knowledge children will learn:

- When online, you can keep safe by being careful about the personal information you give out or keep private when you are communicating or posting online. Ideally, you should only communicate online with people you know in the real world; however, lots of online gaming platforms allow you to play with others from around the world. You don’t know these people and you shouldn’t share information about yourself with them. Remember, we create strong and secure passwords and only share them with our trusted adults at home. Personal information includes your name, email address, phone number, passwords, where you live, the school you go to and where you like to

Spring 2: Scratch Programming – Events and Actions

Knowledge children will learn:

- Like Logo, we can command sprites in Scratch to move using the blocks.
- We can choose and change the “when” event function to start our sprites action from different commands.



- Sprites can be programmed to move specific routes using blocks.

spend your free time. These things shouldn't be shared with people you don't know.

- Meeting someone you have only spoken to online can be dangerous. These people are strangers, even if you communicate or game with them a lot. You do not know if these people are who they say they are.
- Using devices with the capability to go online means that you can send and receive images, texts and files. You can receive them from your friends but also people you don't know. These could be nasty or they could contain harmful viruses for your devices.
- When you talk to people online, they may not be who they say they are. Furthermore, information you read on the internet is not always true.
- If something on the internet, a gaming console or through mobile devices makes you feel uncomfortable or worried, or someone is being unkind to you then you must tell a parent, carer or trusted adult.

Skills children will gain:

- Identify information that can be shared and can't be shared online
- Explain the risks in talking to people they do not know online
- Understand that some transmitted files can be harmful.
- Know what to do if they are uncomfortable with online content.

Children will build on knowledge from:

- KS1 where they will learn about staying safe online through computing topics, PSHE and assembly.

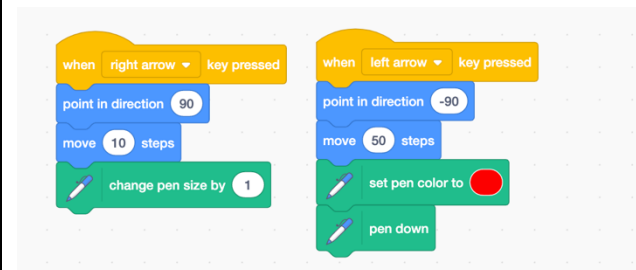
Children will build on this knowledge in:

- KS2 where they will routinely, once a year, revise the concepts of online safety; furthermore, the topic will be covered in assemblies and during PSHE units. Additionally, children will learn about the reliability of information on the internet and plagiarism.

Children learn the following vocabulary:

- Online, device, private, personal, data, share, virus, trusted, secure,

- Like Logo, we can command our sprites, or pens, to draw lines of different styles and colours using pen up and pen down command blocks.



- If a programme has been written and doesn't work the way we would like we call it a bug. To fix it, we call it debugging.

Skills children will gain:

- Explain and identify how an event and action are related in coding.
- Explore the coding behind a product and identify its features.
- Choose appropriate sprites for a game.
- Resize a sprite.
- Recreate an algorithm for moving a sprite using Scratch blocks.
- Duplicate and edit code using Scratch blocks.
- Use the pen down function in Scratch blocks.
- Identify problems with commands in Scratch blocks.
- Design and code a sprite moving through a maze using Scratch blocks.

Children will build on knowledge from:

- KS1 where they will use simple coding to move a robot.

Children will build on this knowledge in:

- KS2 where they will continue to develop their coding and debugging skills in Logo and Scratch.

Children learn the following vocabulary:

- Sprites, command, duplicate, bug, debug, function, blocks, maze, algorithm, event, action, resize, code,

Summer 1: The Internet

Knowledge children will learn:

- When you are browsing the web, you need to think about whether the things you are viewing are reliable. Is it content that you can trust? You could also look at the domain name. Do you recognise the address as one that you can trust? Addresses which end with .sch.uk, .ac.uk or .gov.uk are educational or government websites so are usually reliable. Addresses which end with a .co.uk, .com or .org can be bought by anyone but this doesn't mean they are unreliable.
- Once you have chosen a site, always be critical of what you read. Unlike most non-fiction books that you get from a library, many sites are not checked for accuracy. If you have doubts about how reliable a piece of content is you can check it by looking at other sites. If they all say the same thing it is probably accurate. This is called 'verification'.
- To make good google searches we need to use keywords to refine their search results.
- Who owns the information – the writing – stored on websites? This digital content still has an author and copying from that author is called plagiarism.
- If you want to use a direct quote from a book or a website you need to reference it.
- Many different people or companies own the photos found on Google images. The photographers that take the images – or the companies who buy the images. We can't – and shouldn't – just take these images and use them as our own. These images are copyrighted. Copyright law applies to you no matter what age you are.

Skills children will gain:

- Collect information using internet searches.
- Verify information collected from the internet.
- Refine example search engine searches.
- Use keywords to complete searches.
- Identify plagiarized information.
- Reference information found in books and the internet.
- Collect images without copyright.

Summer 2: 3D Modelling

Knowledge children will learn:

- Shapes can be 2 dimensional or 3 dimensional. 2D shapes are flat and have no depth; 3D shapes have weight, width and depth.
- Computers can be used to model real life items and situations. Complex 3D models are made up of simple 3D shapes combined.
- When working in our 3D space, we have tools and a workplane. We can drag our shapes into the workplane. In the workplane, we can view the objects from different perspectives: top, bottom, left, right, front and back. These will all look different; you haven't moved the objects but they look different from every angle. Zooming in and out lets you see the objects in close up, or view the entire workplane.
- The shapes can be moved in two and three dimensions; they can be resized, lifted and lowered. We use handles to resize, lift and lower. The cone shaped handle is used to lift or lower shapes relative to the workplane.
- Computer models can be created by 3D printers. Plastic filament is heated and fed through a nozzle.
- You can use the side panel to add text and shapes and draw objects by hand. Shapes can be rotated using the double headed handles. When you rotate an object vertically, some of it may end up under the workplace. You can lift it back on top of the workplane.
- Grouping objects is useful when you want to move or resize all of your objects as one.

Skills children will gain:

- Use software to create and view 3D shapes from different angles.
- Resize, lift and lower 3D shapes.
- Combine two shapes together to complete a complex 3D shape.
- Change the colour of a 3D shape.
- Create text and use shapes.
- Rotate shapes and text.
- Draw shapes by hand.

<p>Children will build on knowledge from:</p> <ul style="list-style-type: none">• KS1 where they will begin to use search engines to find information. <p>Children will build on this knowledge in:</p> <ul style="list-style-type: none">• KS2 where they will use search engines in computing and throughout the curriculum. <p>Children learn the following vocabulary:</p> <ul style="list-style-type: none">• range, sources, validity, viewpoints, plagiarism, copyright, data protection, interpreting, refined, search, keywords, results, trust, domain name, verification, reference,	<ul style="list-style-type: none">• Duplicate and edit shapes, including hand drawn shapes. <p>Children will build on knowledge from:</p> <ul style="list-style-type: none">• KS1 where they will begin to use digital programmes to create text, music and imagery. <p>Children will build on this knowledge in:</p> <ul style="list-style-type: none">• KS2 where they will complete vector drawings. <p>Children learn the following vocabulary:</p> <ul style="list-style-type: none">• Workplane, 2D, 3D, lift resize, angles, view, complex, figure, text, reshape, hands, resize, depth, width, weight, colour,
--	---

Year C	Autumn 1: Scratch Programming – Sequencing Sounds	Autumn 2: Flat File Databases
	<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> • Scratch is a programming environment which uses sprites, costumes, backdrops, a stage, programming area and coding blocks. • Each block in Scratch is a command which controls either the sprite or the stage. • You can add sound to a sprite using the sound ribbon. You can add a background to the stage using the background icon. • We can use motion blocks to get our sprites to move. These include steps and rotations left or right. • A sequence is a pattern or process in which one thing follows another. In our coding, we want things to happen in a sequence. • We use an event block to start a project or sequence. • Each sprite has its own sound. The guitar sprite has different pitches of sound. We can move blocks to order sounds. <p>Skills children will gain:</p> <ul style="list-style-type: none"> • Use Scratch to choose and modify sprites and backdrops. • Use motion blocks to move sprites. • Identify the start of a programme using an event block. • Create a sequence of connected commands. • Combine sound commands. • Order notes into a sequence with a start. • Use coding blocks to write a tune for a sprite. <p>Children will build on knowledge from:</p> <ul style="list-style-type: none"> • KS1 where they will be introduced to the Scratch programming software. <p>Children will build on this knowledge in:</p> <ul style="list-style-type: none"> • KS2 where they will develop their coding skills using Scratch. <p>Children learn the following vocabulary:</p>	<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> • A database is a collection of data that is stored in a computer and that can easily be used and added to. You can create databases about any collection of information you would like, for example: your friends, animals, countries. • We can then select, or tick, the attributes of each of the items added to the database. For example we could add zebra and tick lives in large groups, is more than one colour and we could add antelope and also tick lives in large groups and is more than one colour. We can then sort and group and order the information. • Databases can sort information alphabetically A → Z. • We can then use the records to answer questions: which animals can fly? which animals have six legs? Together, each input creates the database. Separately each piece of information is a field. • Each record contains fields. When you use a computer database you can view the data and fields in different ways. • We can sort information using the fields in a database to help answer questions. • We can also search a database to find the answer to questions we have. For example we can search for “Language = German” to find all of the countries which are German-speaking. This will then put the matching records into a group. We can then sort the new group by population to identify the German speaking country with the smallest population. • We can use AND in our searches to sort the information more thoroughly. You could search for Age = 16 AND boarded = Southampton to identify how many sixteen year olds boarded the Titanic in Southampton. We can also search using OR. For example to find out how many people were in the first OR second class. • We can generate charts from our database. <p>Skills children will gain:</p> <ul style="list-style-type: none"> • Create a paper database.

- Sprite, note, repeat, event, begin, modify, motion blocks, commands, sequence

- Sort information input into a paper database.
- Add information to a database.
- Use a database to sort information and answer questions.
- Search a database to identify and create groups and subgroups.
- Sort groups and subgroups to find information.
- Use AND and OR to create searches in a database.
- Generate graphs and charts from information in a database.

Children will build on knowledge from:

- KS1 where they will group data using computer software.

Children will build on this knowledge in:

- KS2 where they will construct and use branching databases to sort information.

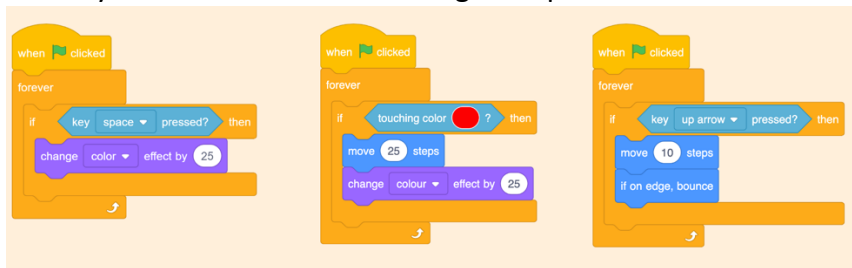
Children learn the following vocabulary:

- Database, field, sort, alphabetical, groups, subgroups, search,

Spring 1: Programming – Selection

Knowledge children will learn:

- We can use conditions to select information and show is something is true or false. For example, if the left arrow is pressed then point in the direction of -90 and move ten steps.
- The condition block needs to be used with other blocks to control the flow of actions.
- Condition blocks are all the same shape (a hexagon). The blocks they are used with have a hexagonal space in them.



- When we use conditions such as “if the teacher is touching their nose” we can have an outcome to be carried out if it is true

Spring 2: Online Safety

Knowledge children will learn:

- We use the SMART rules to keep ourselves safe online, playing games or using apps. We don't share personal information such as name, password, home address or school online.
- Meeting up with someone you only know from online communication is dangerous; this person is a stranger. You should not communicate with strangers online. If someone you only know from online asks to meet up, or for photographs or personal information you must tell an adult.
- Not all links, downloads or messages are safe. Think before you accept or open something online as you never know where it may lead or if it contains a virus. Do not accept something from someone you do not know.
- Not everything online is reliable. Some things may be out of date, inaccurate or false. To find reliable information you should compare

<p>“thumbs up” and we can also use ELSE if the condition is false “thumbs down”.</p> <ul style="list-style-type: none"> Algorithms can sort and select information to ask and answer questions. We can programme scratch to ask and answer questions. We can also add a wait so that the answer is not immediate. <p>Skills children will gain:</p> <ul style="list-style-type: none"> Use condition blocks in Scratch. Predict what the outcome will be from given condition blocks. Use infinite loops to check a condition Identify the condition and outcomes of an if...then...else statement Design the flow of a programme to contain if...then...else <p>Children will build on knowledge from:</p> <ul style="list-style-type: none"> KS1 where they will begin to use Scratch programming. <p>Children will build on this knowledge in:</p> <ul style="list-style-type: none"> KS2 where they will develop their coding skill through a number of database and programming units. <p>Children learn the following vocabulary:</p> <ul style="list-style-type: none"> Condition, outcome, algorithm, 	<p>at least three different websites, check in a book or discuss with an adult.</p> <ul style="list-style-type: none"> You should tell a trusted adult if something you see online, or someone online makes you feel upset, worried or confused. Similarly, if you or someone you know is being bullied online then tell a trusted adult and then use the block features. Use of screen time, including online devices, immediately for trying to sleep can have an impact on the quality and quantity of sleep children and adults have. <p>Skills children will gain:</p> <ul style="list-style-type: none"> Identify the key rules for online safety. Understand routes to take when online content is upsetting. Consider the impact of screen time on wellbeing. <p>Children will build on knowledge from:</p> <ul style="list-style-type: none"> KS1 where they will learn about staying safe online through computing topics, PSHE and assembly. <p>Children will build on this knowledge in:</p> <ul style="list-style-type: none"> KS2 where they will continue to develop their awareness of online safety throughout KS2 and during PSHE units. <p>Children learn the following vocabulary:</p> <ul style="list-style-type: none"> Safe, reliable, personal details, communicate, online platform, cyberbullying, report, wellbeing, screen time
Summer 1: Photo Editing	Summer 2: Desktop Publishing - PowerPoint
<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> Digital media can be edited using computer software. The composition of a digital image can be changed by rotation and cropping. We can also use computer software to change or enhance the colours in digital images. Different colour effects can create different meaning and feelings in a digital image. 	<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> Desktop publishing is creating a document using both text and images such as invitations, magazines or newspapers using computer software. It is called desktop publishing as it was first completed on desktop computers. PowerPoint is software designed for making presentations.

<ul style="list-style-type: none"> • Digital images and compositions can be edited using cloning. Parts of an image can be removed by cloning. • Parts of images can be selected, copied and pasted to change a digital image. <p>Skills children will gain:</p> <ul style="list-style-type: none"> • Improve an image using rotation • Crop an image using photo editing software • Change the colours of a digital media to suit different purposes • Add to a composition using cloning • Remove parts of an image using cloning • Copy and paste parts of an image. <p>Children will build on knowledge from:</p> <ul style="list-style-type: none"> • KS1 where they will begin to use computing software to create and edit drawings. <p>Children will build on this knowledge in:</p> <ul style="list-style-type: none"> • KS2 where they will edit film and audio. <p>Children learn the following vocabulary:</p> <ul style="list-style-type: none"> • Composition, cloning, colour, effect, suit, improve, rotation, crop, copy, paste, digital, 	<ul style="list-style-type: none"> • We can add text and images like we do in Word; we can also choose from templates or select our own background colours and themes. • PowerPoints can be created to have transitions between slides. These are found in the transition ribbon. This is how one slide will become the next. Examples are morph, fade, wipe and reveal. • We can also animate our text, shapes or images in PowerPoint. Images, text or shapes can appear, more or disappear in a number of ways. Examples include blinds, chequerboard, dissolve. We can also have our text, shapes or images getting bigger or smaller, spinning or changing colour. <p>Skills children will gain:</p> <ul style="list-style-type: none"> • Add text and images to a PowerPoint. • Use templates to create a PowerPoint. • Use transitions to move between slides. • Animate images, text and shapes to appear. • Animate images, text and shapes to change. • Animate images, text and shapes to disappear. <p>Children will build on knowledge from:</p> <ul style="list-style-type: none"> • KS1 where they will be introduced to desktop publishing. <p>Children will build on this knowledge in:</p> <ul style="list-style-type: none"> • KS2 where they will use Microsoft Word for desktop publishing. <p>Children learn the following vocabulary:</p> <ul style="list-style-type: none"> • PowerPoint, templates, appear, change, disappear, transition, slide, animate
---	--

Year D	Autumn 1: Scratch Programming – Game Variables	Autumn 2: Excel – Writing Formula
	<p>Knowledge children will learn:</p>	<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> • We can add data to Excel spreadsheets by typing into cells.

- A variable can be set and changed throughout the running of a program. A variable is something that is changeable.
- A variable is a place holder in the memory of a computer. It can hold one value at a time. Each variable in a program is named.
- If the value of a variable is changed the new value replaces the previous value. If you remove the previous variable, you destroy it.
- Variables are named so that we can remember what they contain. To help when programming, variable names should be short and unite. They should contain underscores not spaces.
- A program can use the value of a variable to perform different tasks. Operator blocks are some of the ways we can do this. These use =, < and > symbols.
- An algorithm is a precise sequence of instructions, or set of rules, for performing a task.

Skills children will gain:

- Identify examples of variables in coded programs
- Design a project including variables
- Create a variable
- Name variables
- Decide where in a program to change a variable.
- Make use of an event in a program to set a variable
- Analyse games to identify features
- Design a game using variables

Children will build on knowledge from:

- KS1 where they will begin to use coding in Scratch.

Children will build on this knowledge in:

- KS2 where they will have studied coding using Scratch and Logo including databases, using search functions and time delays.

Children learn the following vocabulary:

- We can use the sort and filter options to order our data.
- We can use Excel to complete addition and subtraction problems using simple cell codes and + -
- Excel code can be manipulated to add multiple numbers at once using the SUM function.
- Numbers can also be multiplied and divided using Excel using * and /
- Excel can be used for shopping lists, budgeting and planning.
- We can give cells different rules which will change the colour of the cell dependent on the outcome. This is called conditional formatting.

Skills children will gain:

- Enter data into the cells of an Excel document
- Use the filter and sort tool to order data.
- Use +, -, * and / to add, subtract, multiply and divide.
- Calculate the sum total of a set of data using the SUM function
- Use conditional formatting to change the colour of cells.
- Investigate budgeting and planning using Excel.

Children will build on knowledge from:

- KS1 where they will begin to familiarise themselves with Microsoft software and coding programmes.

Children will build on this knowledge in:

- KS2 where they will be introduced to Excel and use the software to construct charts.

Children learn the following vocabulary:

- Cell, Excel, code, formula, manipulated, budgeting, planning, conditional formatting

- Variable, algorithm, sprite, change, value, blocks, operator blocks, sequence,

Spring 1: Desktop Publishing - Word

Knowledge children will learn:

- Desktop publishing is creating a document using both text and images such as invitations, magazines or newspapers using computer software. It is called desktop publishing as it was first completed on desktop computers.
- We can use Microsoft Word to construct tables using the insert function. These tables can be coloured using the fill options. The tables can be modified with different weight or styled edges.
- We can use Microsoft Word to create numbered lists, bullet pointed lists and sort our lists into alphabetical order using functions in the home ribbon.
- We can change our orientation from portrait to landscape using the layout ribbon. Furthermore, we can edit the margins of our document and put our writing into columns.
- Microsoft Word also has a spelling and grammar check.

Skills children will gain:

- Construct tables using Microsoft Word.
- Use editing features to draw a table using Microsoft Word.
- Create numbered and bullet pointed lists.
- Alphabetize lists using Microsoft Word
- Alter the orientation and margins of a Word document.
- Correct spelling and grammar using features in Word.

Children will build on knowledge from:

- KS1 where they will be introduced to word processing software.

Children will build on this knowledge in:

Spring 2: Stop Frame Animation

Knowledge children will learn:

- Animations have been created throughout history — even before computers were invented!
- An animation is where a number of pictures are drawn or taken of an object or picture, and the pictures are shown quickly, which makes it look like the object or picture is moving.
- The most effective animations are simple.
- Onion skinning shows the previous frame faintly to help you see where to draw next.
- Each of the pictures that you take to make your animation is called a frame.

Skills children will gain:

- Predict what animals will show.
- Plan 4 frame animations.
- Use iPads to create a 4 frame animation.
- Create animations using backgrounds.
- Choose appropriate sound effects for an animation.
- Add title image and credits to an animation
- Link two or more animations together using transitions

Children will build on knowledge from:

- KS1 where they be introduced to animation.

Children will build on this knowledge in:

- KS2 where they will use video recording and editing software.

Children learn the following vocabulary:

- Animation, frame, backgrounds, transitions, link, stop frame,

<ul style="list-style-type: none"> • KS2 where they will use Microsoft Word to create templates and documents using text and images. <p>Children learn the following vocabulary:</p> <ul style="list-style-type: none"> • Tables, ribbon, draw, insert, weight, width, style, numbered, bullet point, alphabetised, orientation, landscape, portrait, margins 	
<p align="center">Summer 1: Online Safety - Apps</p>	<p align="center">Summer 2: Creating Media – Audio Editing</p>
<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> • Technology is amazing, incredible however, whilst there are many positives for technology and social media there are also potential risks and dangers which we must acknowledge with certain apps. • INSTAGRAM What is it? It is an image and video sharing app where users can share moments and like other peoples. There are also filters where people can adjust colours and brightness etc. Users can make their content searchable by using hashtags. How can we stay safe? Instagram has a 13+ age restriction which should be followed to prevent children being exposed to inappropriate content. Accounts can be made private and only follow people you really know in real life. • ROBLOX What is it? A multiplayer, online game. The world’s largest social platform for gaming. How can we stay safe? Follow the age guidelines, enable a 2-step verification, disable game chat and don’t lie about your age. Remember to only talk to and add people you know in real life. • SNAP CHAT What is it? – A photo and video sharing app where you can also chat. You can share photos and videos with one person or your entire contact list. It also provides numerous filters to change your appearance. How can we stay safe? Respect the age restrictions, report any inappropriate contact, only talk to and send messages or photos to people you know, restrict location sharing, enable ghost mode. • Messages that make people feel bad are not okay. Sometimes that meanness is unintentional, but when people use tools such as the Internet and cell phones to deliberately upset someone else over and over, that’s cyberbullying. Explain that cyberbullies 	<p>Knowledge children will learn:</p> <ul style="list-style-type: none"> • To work with sound digitally, we need an input device (microphone) and output devices (speaker or headphones) • Laptops, tablets, Dictaphones, smartphones, desktop computers and answerphones are examples of devices which can record sound and play it back. • Some IT devices have microphones and loudspeakers built into them • Audacity is a free program which we can use to record, edit and play back audio. • Music should not be recorded illegally. Examples of legal downloading and streaming services are Spotify, Apple Music and Youtube Music. • Audacity displays recorded sound as soundwaves. A peak waveform should be about -.5 to -0.5. • Computers allow you to edit audio. You can remove, or trim, any part you do not want. For example silences at the beginning or end. After you have trimmed your audio, you can move the tracks so it plays in the order you wish. • A podcast is a recording that is made available over the internet and can be listened to, or downloaded, on a digital device. • A podcast might include voices, jingles, sound effects, background music, presenters names, podcast name, introduction • Sound can be layered and imported. <p>Skills children will gain:</p> <ul style="list-style-type: none"> • Identify input and output sources

deliberately try to make you feel that way, just like real-life bullies.

Skills children will gain:

- Identify the key rules for online safety.
- Understand the positives and negatives of online apps.
- Consider the impact of online messaging.
- Explain the steps to take when reporting a concern.

Children will build on knowledge from:

- KS1 where they will learn about staying safe online through computing topics, PSHE and assembly.

Children will build on this knowledge in:

- KS2 where they will continue to revise online safety in computing, PSHE and throughout assemblies.

Children learn the following vocabulary:

- Apps, online, report, concern, cyberbullying, technology, dangers,

- Record and listen to audio
- Identify what makes a good voice recording.
- Rerecord audio to improve content.
- Inspect soundwaves and trim recordings.
- Identify the features of a podcast.
- Import sound using Audacity.
- Layer sounds to create a podcast.

Children will build on knowledge from:

- KS1 where they will begin to make and record sound using computer devices

Children will build on this knowledge in:

- KS2 where they will edit and record video.

Children learn the following vocabulary:

- Soundwaves, crop, input, output, content, podcast, jingles, microphones, speakers, Dictaphones