Year 2: Autumn

2.1 Coding

Enquiry Question	How are computer programs created?	
	Required Prior Knowledge	**Knowledge to be taught**
Declarative Knowledge	• Computer programs work by following instructions called code known as algorithms. • There are objects and action code block in the 2Code environment and that you can make a simple program using these. Each single instruction such as 'Object Right' is called a command. • An event is something that makes a block of code run such as a user pressing a key or clicking a screen. Event, object and action code blocks can be used together. • When code is run this is known as being executed. • Debugging is when we fix code that isn't working how it was designed to. • Scenes can be made using backgrounds and objects. Backgrounds can be changed as well as objects and that these have attributes (properties) that can be modified.	• A set of instructions is known as an algorithm. • Code can be created that detects when two objects have collided. • Timers can be introduced into programs to make parts of the program run after a set time. • Events in computer programs cause a block of code to be run. • Buttons are an object type in 2Code. • Bugs are bits of code that are stopping a program from working how it was intended. • Debugging is the process of looking for any problems in code, fixing the problems and repeatedly testing them.
Procedural Knowledge	• Recognise **When Clicked** code block as an event block. Arrange a **When Clicked** code block in front of an object. Give an object code block an action when it is clicked. • Run code with a **When Clicked** event and observe what happens when the event occurs. • Execute code by clicking the Run & Stop buttons. Arrange blocks into different places. • Change actions attributed to objects. Switch	• Recognise the **collision detection** block as part of the event category blocks. • Assign an event for when the two objects collide. • Recognise the **timer block** and drag it into a program. • Place up to four different objects into a design scene of a program. • Recognise the **event command blocks.** • Insert a button into a design mode scene that contains other object types. • Nest code within the **When Clicked Button** that makes an object carry out an action when the button is clicked. • Run the code and check that the program is operating correctly.

	to design view. • Select a background using the background icon. • Draw a plan of a scene with objects. Plan what the objects in the scene will do. • Create a program from a plan that includes objects, actions and a **When Clicked** event. • Execute the program and test if it is doing what is intended in the plan. • Debug the program if the program isn't working how it was planned.					
Vocabulary	**action, algorithm, background, bug, button, click events, collision detection, command, debug, event, execute, image, implement, interaction, interval, object, output, predict, properties, run, scale, scene, sequence, timer, turtle object, when clicked, when key event, when swiped event**					
Learning Questions	**How do you create computer programs using an algorithm?**	**What is collision detection?**	**How do you design an algorithm that follows a timed sequence?**	**What are the different attributes of different objects?**	**What are the functions of buttons in a program?**	**Can I debug a program (2Code?**
Mastery Key	➢ Can debug their own and other's programs using design documentation to test against.					

Year 2: Autumn

2.2 Online Safety

Enquiry Question	How can things be shared safely online?	
	Required Prior Knowledge	**Knowledge to be taught**
Declarative Knowledge	• It is important to log in to a site safely and to keep passwords safe. • Some online sites have an area for their work that is accessible only to the user and their teacher. • An avatar is a virtual representation of them suitable for use online. • Different icons in a tools bar carry out different functions. • It is important to log out when you have finished working as a way of securing personal accounts.	• Searches can be refined so it is easier to find something. • Work can be shared in a variety of ways. • Email is a way of communication and know that in this form of communication, as with others, you need to be considerate of the user. • The term digital footprint relates to information that a user puts online, and that this footprint may remain even when we think we have removed the information.
Procedural Knowledge	• Save work in their folder. • Make and edit their own avatar. • Locate work they have done previously in their work folder. • Open the file by double clicking on it. • Locate the search bar. • Search for a given resource and double click to load the resource up. • Add images. • Save their work in their work folder using an appropriate file name.	• Know what is meant as a safe search. • Look at the ways to narrow down the search. • Tell a trusted adult if they search for something the results are inappropriate or upsetting. • Explain what email is and the advantages of it over other forms of communication. • Reply to an email. • Explain what kind of information may be left on a digital footprint and how this could be used to identify them. • Keep personal information private and stop posting information that may lead others to identify them.
Vocabulary	**Attachment, digital footprint, display board, email, filter, identifying, internet, personal information, private information, protection, reply, search, secure, sharing**	
Learning Questions	**How can things be shared electronically for others to see?**	**What is email?** / **Can I explain what is meant by a digital footprint?**
Mastery Key	➢ Can explain reasons for keeping their password safe that include protecting their personal information.	

Year 2: Spring

2.4 Questioning

Enquiry Question	What are binary trees?				
	Required Prior Knowledge		Knowledge to be taught		
Declarative Knowledge	• Data is a collection of information, used to help answer questions. • A pictogram is a visual way of representing data. • Items can be sorted using a range of criteria. When sorting items, a logical process should be used.		• Pictograms created through software or physically are of limited use beyond answering simple questions. • Information can be separated by using yes/no questions. • A binary tree is a simple way of sorting information into two categories. • Databases are a computerised system that make it easy to search, select and store information. • Databases contain records which have a variety of information about a specific entry. These can be searched using simple and complex search questions.		
Procedural Knowledge	• Collect data on a common theme such as how children travel to school. • Represent data collected as a class using physically created pictograms. • Interpret a pictogram by comparing amounts of different categories. • Interrogate a pictogram by thinking of questions. • Explain how items have been sorted. • Follow a computer program algorithm checking shapes have been sorted correctly. • Identify what each criterion container is.		• Create a class pictogram using 2Count. • Identify questions that we can and can't ask to find information on the pictogram. • Create and use yes/no questions to find individual paper records. • Design a binary tree physically using paper to sort simple pieces of information. • Use a pre-populated binary tree program such as 2Investigate to find answers. • Open a 2Investigate database and identify the records which make up a database. • Identify fields as pieces of information collected for a record. • Find specific records that meet a search query.		
Vocabulary	**Addition, block graph, cell, coins, column, copy, count tool, cut, data, drag, equals tool, image value, label, paste, price, row, speak tool, table, toolbox, total**				
Learning Questions	**What do we already know about pictograms?**	**What are yes/no questions?**	**What is a binary tree?**	**How is a binary tree used to answer questions?**	**Can I create a database (2Investigate)?**
Mastery Key	➢ Can use a database to answer questions.				

Year 2: Spring

2.5 Effective Searching

Enquiry Question	How do you search the Internet effectively?	
	Required Prior Knowledge	**Knowledge to be taught**
Declarative Knowledge	• It is important to log in to a site safely and to keep passwords safe. • Technology is science and engineering knowledge put into practical use to solve problems or invent useful tools. • Technology is used both within and outside school.	• The Internet is a global network of connected computers around the World. • The World Wide Web refers to the documents and pages someone sees when using a browser. • Websites can be found using a browser that contains a search engine. • Search engines use millions of people's digital footprints to help provide more accurate results. • To find results that we want on a search engine, we need to search effectively.
Procedural Knowledge	• Locate the search bar. • Search for a given resource and double click to load the resource up. • Recognise technology. • Identify common types of technological devices. • Describe the function of technology examples within school and explain how it is helpful. • Describe the function of technology examples outside school and explain how they are helpful.	• Answer questions accurately about what the Internet is by completing a quiz. • Explain the difference between the Internet and the World Wide Web, recognising that the World Wide Web is powered by the Internet. • Recognise a web browser and search engine and key elements within. • With guidance, enter a search query in a search engine and review results. • Find the number of results for a query entered into a search engine. • With guidance, use some of the search tools on a search engine such as: all, images and news. • Discuss with others that a digital footprint is a record of individuals' interactions online and that this is used to help search engines provide better results for individuals. • Search using words and questions.
Vocabulary	**Browser, device, digital footprint, domain, internet, network, search engine, URL, web address, web page, web site, world wide web**	
Learning Questions	**What is the terminology associated with the Internet and searching?**	**Can I search the Internet effectively?**
Mastery Key	➢ Can articulate how to search the Internet safely and effectively.	

Year 2: Summer

2.6 Creating Pictures

Enquiry Question	What are the different ways that art is created on the computer?				
	Required Prior Knowledge	**Knowledge to be taught**			
Declarative Knowledge	• Images can be created within e-book software. Animations can be included in e-books. • Text fonts and sizes can be changed in e-books to suit an intended audience.	• Computer drawing programs contain palettes - the range of colours or shapes available - and a choice of painting effects. • The size of an onscreen painting tool brush stroke can be manipulated. • Intensity of colours can be manipulated. • Outline features in drawing programs help a user with the formation of paintings. • Fill tools speed up the process of colouring enclosed areas on a painting. • Pattern tools can be used to create repeating patterns and manipulate how a pattern is arranged.			
Procedural Knowledge	• Identify the animation tool and test each animation effect within the animation tool for a selected image. • Record sound using the microphone and apply to a page. • Insert a piece of music created from the piano synthesiser and apply to a page. • Locate the clip art gallery icon. Select a background for a page from the gallery. • Create a background for a page using the pen tools. Apply text changes.	• Select a painting effect and colour from the palette. • Produce a range of paintings formed from different painting effects. • Use the brush tool slider to change the size of brush strokes. • Resize an outline using the draggable blue squares and change the points using the draggable green squares. • Position the outline on the page where needed and use the fill tool. • Manipulate how a pattern is arranged using the pattern tools. • Use the eCollage template and combine drawing by using the clipart library.			
Vocabulary	**art, clip-art, diagonal, dilute, eCollage, fill, horizontal, impressionism, line, palette, parallel, pointillism, repeated pattern, rotated, stamps, style, surrealism, symmetry, vertical,**				
Learning Questions	**How is art created on the computer?**	**How can pointillist art be recreated on the computer?**	**How can Mondrian's art be recreated on the computer?**	**How can William Morris's art be recreated on the computer?**	**Can I create my own surrealist art on the computer (2Paint a Picture)?**
Mastery Key	➢ Can use a range of effects and functions in 2Paint a Picture.				

Year 2: Summer

2.8 Presenting Ideas

Enquiry Question	What are the different ways to present digital content?			
	Required Prior Knowledge	**Knowledge to be taught**		
Declarative Knowledge	• Images can be created within e-book software. Animations can be included in e-books. • Text fonts and sizes can be changed in e-books to suit an intended audience. • Computer drawing programs contain palettes - the range of colours or shapes available.	• Digital content can be presented in many forms. • Quizzes can be made using programs such as 2Quiz. • Digital content should be presented using a suitable format. • Digital content in one format can be re-used in other formats to present to audiences.		
Procedural Knowledge	• Identify the animation tool and test each animation effect within the animation tool for a selected image. • Create a background for a page using the pen tools. Apply text changes. • Select a painting effect and colour from the palette. • Produce a range of paintings formed from different painting effects. • Use the eCollage template and combine drawing by using the clipart library.	• Compare a traditional book with an e-book and can talk about the differences. • Recognise digital concept maps and their use for organising ideas. • Discuss the differences between a traditional book, e-book, concept map and digital quiz including the advantages and limitations of each format. • Explore the front screen of 2Quiz and identify the key ideas such as introductory screen, delete, clone, add questions, preview and play quiz. • Add a question type to 2Quiz recognising some of the differences between types. • Compare the digital mind map in 2Connect with a digital fact file in 2Publish. • Identify the format that is most used when presenting to an audience. • Open a 2Connect file with information on it. Open a 2Publish file. • Use the 2Connect file to support creating content in the 2Publish file. • Use font tools, clipart, page settings and images to enhance digital content in the digital publishing file.		
Vocabulary	E-book, fact file, fiction, mind map, multiple-choice, node, non-fiction, presentation, quiz			
Learning Questions	**How can a story be presented in different ways?**	**How do you present information as a quiz?**	**What is a fact file?**	**Can I present digital content on the computer?**
Mastery Key	➢ Can use a variety of software to manipulate and present digital content and information.			