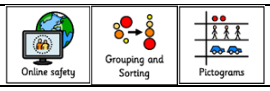
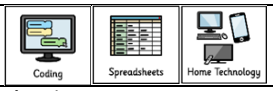
Progression in Computing

Computing	Nursery		
	Autumn	**Spring**	**Summer**
Early Learning Goal	There is no ELG for Tecnology but we feel it is important that children learn how to use resources safely and correctly		
Unit	**Keeping safe with Smartie the penguin**	**Moving around**	**Lets find out**
Programming		Make a Bee-Bot move by choose which buttons to press. Make a remote control car move along floor map Use programmable toys	
E – safety	Stay on the program that an adult has put on. Be kind to my friends when I use the computer. Adult to select website / program and other age appropriate Apps, programs and websites.		
Technology in the World Around Us			Talk about different kinds of information such as pictures and words. Move objects on a screen. Draw pictures on a computer/ iPad. 2Paint a Picture, Simple City, Doodle Buddy App. What is ICT used for ?
Vocabulary	computer, click, drag, turn, pull, push, wind, lift, press, twist, button, log in, log out, sound, key, keyboard, laptop, monitor, mouse, mouse mat, headphones, camera, television, iPad, tablet, telephone, mobile phone, CD, DVD player, video, remote control, printer		
	Alongside this list, it is important to ensure the children in both EYFS and KS1 recognise technology and the uses of it beyond the school, in their homes and outside environment		

Progression in Computing

Computing	Reception		
	Autumn	Spring	Summer
Early Learning Goal	There is no ELG for Tecnology but we feel it is important that children learn how to use resources safely and correctly		
Unit	**Keeping safe with Buddy the dog**	**Moving around**	**Lets find out**
Programming		Make a Bee-Bot move by choose which buttons to press. Make a remote control car move along floor map Use programmable toys	
E – safety	Stay on the program that an adult has put on. Be kind to my friends when I use the computer. Adult to select website / program and other age appropriate Apps, programs and websites.		
Technology in the World Around Us			Talk about different kinds of information such as pictures and words. Move objects on a screen. Draw pictures on a computer/ iPad. 2Paint a Picture, Simple City, Doodle Buddy App. What is ICT used for ?
	Alongside this list, it is important to ensure the children in both EYFS and KS1 recognise technology and the uses of it beyond the school, in their homes and outside environment		
Vocabulary	computer, click, drag, turn, pull, push, wind, lift, press, twist, button, log in, log out, app, double click, interactive touchscreen, whiteboard, projector, speaker, sound, key, keyboard, laptop, monitor, mouse, mouse mat, headphones, camera, television, iPad, tablet, telephone, mobile phone, CD, DVD player, video, remote control, printer		

Progression in Computing

Computing	Year One		
	Autumn	**Spring**	**Summer**
Unit			
Substantive Knowledge		**Lego Builders** -To achieve a specific effect when building something, accurate instructions must be followed -.Computer programs need precise instructions to follow, and these are called algorithms. - If instructions are vague, outcomes will vary for any given task. -The order of instructions for a task affects the results. - Correcting errors in an algorithm or program is called debugging. **Maze Explorers** -You can move a character (turtle) within specific computer programs around a computer screen such as 2Go by using direction keys. -When a direction key is used it is known as a command. -On screen direction keys can have eight possible directions which includes diagonal movements. -Number keys can be combined with direction keys to give a program more accurate instructions and avoid less command clicks -Each square on a grid relates to 1 unit and that when using number keys. **Coding** -Tasks can be given to people and computers by using instructions. -Computer programs work by following instructions called code known as algorithms. In both cases, these need to be clear and concise. -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 -Debugging is when we fix code that isn't working how it was designed to	**Animated Stories** -There is a difference between traditional books and ebooks. -Images can be created in an ebook software -Animations can be included in ebooks -Audio such as sound effects can be included -Text font and sizes can be changed -Copy and Pase features can be used. **Spreadsheets** -There are specific features and purposes of a spreadsheet, and they can navigate around and enter data. -specific features in spreadsheets such as 2Calculate allow user to insert content such as images into a cell. The cells content can be locked or moved using additional features. -The Speak and Count tools serve a specific purpose in 2Calculate. **Tech Outside School** Technology is science and engineering knowledge put into practical use to solve problems or invent useful tools. Technology is used within school. Technology is used outside

Disciplinary Knowledge			
E-Safety	Know what personal information is and be able to give examples. • Recognise that there may be people online who could make people feel sad, embarrassed or upset. • Know who to go to for help with problems regarding digital activity. • Describe how to behave online in ways that do not upset others and can give examples.		
Digital Fluency	.Save and retrieve a programme with support. . Turn a computer off and on independently. • Log on with support . Left hand button to click and select and move the mouse around the screen. Aware of different types of mouse. I.e mouse, track pad and how to navigate an ipad by touch. .Navigate the keypad to find letters. • Basic letters and numbers. Space bar, enter button. . Type words, letters and numbers.		
Programming	Give directional vocabulary that is clear and unambiguous such as: forwards, backwards, turn left, turn right. • Predict and explore what will happen when a sequence of instructions is given. • Create a set of instructions (algorithms) for a digital device that has a specific output. (using a Beebot and creating a map/maze) • Use a logical approach to debug simple algorithms and programs.		
Networking	Know what a computer is?		
Multimedia	.Use various tools such as brushes, pens, rubber, stamps, and text. (Paint) . Add text to a template document using an image and word bank. (Microsoft Word) • Create my own documents, adding text. (Microsoft Word) . Record your own voice and play back to an audience. (Voice memo app on iPad) • With support, use a digital camera / iPad to capture images. (Camera app on iPad) • Use an app to record an activity. (Camera app on iPad)		
Data Processing	Discuss what data means. • Collect physical data. • Group data. • Input data into a premade written chart		
Vocabulary	Avatar, button, device,file name, home screen, login, logout, menu, workarea, password, private, saving, search, shared folder, tool bar, typing, grouping, sorting, equal, groups, less than, more than, data, pictogram, results,	Algorithm, debugging, code, programme, recipe,instructions, machine, program, sequence, challenge, command, delete, direction	Arrow keys Backspace key cursor cell tool cells clipart Collate Columns Count tool Data Delete key Image toolbox Lock tool Move Pictogram Rows Speak tool spreadsheet

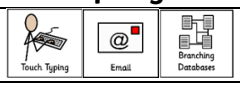
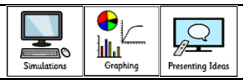
Progression in Computing

Year Two

	Autumn	Spring	Summer
Unit			
Substantive Knowledge	**Coding** -In computing, a set of instructions is known as an algorithm. -Steps in an algorithm must be followed in order to achieve the intended outcome -Code can be created that detects when two objects have collided. This code can have an action associated with it. -Programs follow a sequence of instructions (commands) in order. -Events in computer programs cause a block of code to be run -Buttons use the 'When Clicked' event and will run a piece of code when they are clicked on. -Bugs when referring to computer programs, 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. **Online Safety** -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 communicating 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 **Spreadsheets** -Building on previous knowledge spreadsheet files can be opened, saved and edited. -There are keyboard shortcuts for copy, past and cut. -The totalling tool counts all the cells behind the tool. -A spreadsheet will automatically work out how much various items will cost when bought. -Data in a table table can be edited and then use this data to create a block graph.	**Questioning** -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. When using a binary tree, users can only ask yes/no questions to find a specific piece of information -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. -Users can search a database using simple and more complex search questions **Effective Searching** -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 **Creating Pictures** -Computer drawing programs contain palettes. Palettes are the range of colours or shapes available to the users. -Computer drawing programs may have a choice of painting effects. Painting effects can be combined to help a user make pictures. -The size of an onscreen painting tool brush stroke 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.	**Making Music** -Music can be made digitally -Sounds can be incorporated into music programs to make a melody -The speed of a digital musical composition known as tempo can be altered -The volume of instruments/sounds on a track can be changed when using music programs. -Music programs let users incorporate their own sounds into a composition **Presenting Data** -Digital content can be presented in many forms. -Quizzes can be made using programs -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
Disciplinary Knowledge			
E-Safety	.Explain how other people's identity online can be different to their identity in real life. • Know what private means and which data should be kept private. • Know that we do not share personal information. • Know to ask a trusted adult before clicking 'yes' 'I agree' or 'accept'. • Identify safe and unsafe online behaviours. • Begin to know how to search the internet safely.		
Digital Fluency	.Save and retrieve a programme or work independently. X button. • Use save as and save coming up with own name for document. • Minimise, restore down document. • Turn on and log on independently. • Minimise, maximise buttons, as well as screen splitting and restore down. .• Left button double click to highlight word. Hold and drag. • Write sentences with capitals and full stops. • Use the Caps lock button to write capital letters. Hold the shift key to for capitals. • Full stop button. • Volume buttons on software. .Typing sentences with capitals and full stops. • Change the colour, font and size of the words. • Finding the home button.		
Programming	Give directional vocabulary that is clear and unambiguous such as: forwards, backwards, turn left, turn right, north, south, east, west. • Predict and explore what will happen when a more complex sequence of instructions is given. (using the apps) • Create a set of more complex instructions (algorithms) for a digital device that has a specific output. (Beebot app leading towards scratch junior) • Use a logical approach to debug more complex algorithms and programs. • Algorithm – individual instructions • Program – lots of algorithms working together		
Networking	.Can access content from the internet using a web browser. • Is aware of the importance of staying safe online – the need for keeping personal data private and communicating respectfully • Navigates the web and can carry out simple web searches to collect digital content. Demonstrates use of computers safely and responsibly, knowing a range of ways to report unacceptable content and contact when online.		
Multimedia	.Use a wider variety of tools (including skills learnt in Year 1) on a computer software, inserting and manipulating shape. (Paint) .Add and edit text, considering style, colour, and layout of font using a document you have created. (Microsoft Word) • Insert an image to a document. (Microsoft Word) .Use video cameras on either laptop or iPad to capture still images and video footage. (Camera app on iPad) • Re-open a recorded clip they have made. • Explore sound and music in animation and video.		
Data Processing	Create a simple pictogram as a group. • Read information in a digital pictogram. • Read and retrieve information from a pictogram. • Collect data using a tally chart. • Present collected data using a pictogram app. • Open and edit a pictogram. • Compare two pictograms.		
Vocabulary	Button Collision detected Design mode Key pressed nesting predict sequence test text timer execute properties scale scene When swiped attachment Digital footprint Display board email Internet browser Network Online safety Save Search Search engine Searching sharing Template Wireless WWW	Attachment Digital footprint Display board email Internet browser Network Online safety Save Search Search engine Searching sharing Template Wireless WWW animated Avatar Binary tree Copy and paste Database Equal tool Lock tool Presentation Question Soundtrack Space bar key Volume	attachment Digital footprint Display board email Internet browser Network Online safety Save Search Search engine Searching sharing Template Wireless WWW Animated Avatar Binary tree Copy and paste Database Equal tool Lock tool Presentation Question Soundtrack Space bar key Volume

Progression in Computing

Year Three

	Autumn	Spring	Summer
Unit			
Substantive Knowledge	**Coding** -Flowcharts are a type of diagram that use specifically shaped labelled boxes and arrows to represent an algorithm as a diagram. -Timers are used in coding to help control when a block of commands are run. -Repeat is a control block and blocks of commands can be set to repeat a specified number of times using the repeat control block. -Testing, debugging and fixing are an important part of the process of making computer programs. Understanding what nesting is and the effect it has on a program can help when trying to debug a program **Online Safety** -Passwords are private and should never be shared. -Blogs can help us to communicate our thoughts and ideas. -Not everything online is factually correct, and some websites can be referred to as spoof websites. -PEGI / BBFC ratings exist to keep young people safe and steps can be taken should students see inappropriate content. **Spreadsheets** -Graphs can be generated from data within a sheet. If data is changed on the sheet, then the graph automatically updates to recognise these amendments. -The more than, less than and equals tools serve a purpose to define a number -Cells all have their own individual address. They are referenced using letters and numbers.	**Email** -Typing is the action or skill of writing something by means of a keyboard (physical or virtual) and that it is important to have a good posture when typing. -Home, top and bottom row keys are areas on a keyboard where specific keys are located. -To be an efficient at typing hands should be positioned correctly on a keyboard and that the left and right hands should work independently of each other. -There are different methods of communication and they each have strengths and weaknesses -Emails are electronic versions of letters, and they can be sent and received almost instantly to anyone with an email address. -It's important to use email systems safely and that there are things people can do to try to keep themselves safe. -pictures, documents and other file types can be attached to emails. **Databases** -A database is a collection of data organised in a way that it can be searched, and information found easily. -Objects can be sorted using yes/no questions and relate this to how computer binary databases work. -Branching databases can be created using programs -It is important to test and debug if needed when creating branching databases so that they work as intended.	**Simulations** -Computer simulations are programs that model real-life situations. They allow people to test various scenarios out that might be too expensive or dangerous to do in real life. -Computer simulations can be realistic and also unrealistic depending on how well thought out they are. -It is important to analyse and evaluate simulations to assess their usefulness and overall realism. -Simple simulations can be created using familiar software such as 2Create a Story. **Graphing** -Computer programming can be used to present data in a more meaningful way. -It's important to use the most appropriate graph type according to the information entered into it. -Graphing programs can be used to help solve questions. **Presenting** -Presentation software is a way of creating and displaying information to an audience that is clear and engaging. -Simple presentations can be made quickly by using features such as textboxes, word art and images -Presentations can include additional slides, video and audio -Shapes and lines can be added to slides. -Animations can be incorporated within Google Slides files. -transitions can be applied between slides. -Designs of slides can be changed.

Disciplinary Knowledge

E-Safety	.Confidently know how to search the internet safely and choose age-appropriate resources and websites. • Know how to create a secure password. • Know what a digital footprint is and that any information online can be used by others. • Explain what it means to 'know someone' online and why this might be different from knowing someone in real life. • Know how to create a positive online presence.
Digital Fluency	.Create folders within a folder to organise work. Move documents from folder to subfolders. .Log on to different softwares. i.e. Accelerated reader, TT rockstars. . • Use the home button to find different programmes. • Create their own secure password referring back to the E-safety lesson on passwords. Right click button: Copy and paste. • Cut and paste. • Change font Shift key • Capitals with shift key. • Use the shift key to type symbols. For example: question marks, exclamation marks, speech marks. • Start to learn to touch type. Main middle row. .Apply the left and right hand skills to drag and drop, copy and paste words. • Change the bold, underline and italics of a word. • Inserting shapes. • Adding writing to shapes. • Right click and edit shapes. • Formatting backgrounds. • Insert borders. • Creating a poster
Programming	.Design and write a more complex programme to accomplish a specific goal. • Reason and explain how simple algorithms I have designed and written work. • Detect, correct and debug errors in algorithms. • Control/simulate physical systems with algorithms. • Solve problems within a program by breaking it into smaller parts. • Multiple sprites, creating own
Networking	• Pupils know what a 'network' is and understand how different types of networks – LAN (Local Access Network), WAN (Wireless Access Network), PAN (Personal Access Network), MAN (Metropolitan Access Network) – work. • Pupils to know the difference between ethernet and wi-fi access • Pupils understand the difference between the internet and the internet service – internet is global network of networks whilst the internet service (www.) is information accessed by via the internet. • Pupils are aware of the role of routers when viewing websites • Pupils send and respond to e-mails using a variety of attachments. • Pupils can use a search engine to find a specified picture.
Multimedia	Acquire, store, and combine images from cameras or the internet for a purpose. • Use the print screen function and snipping tool to capture and crop an image. (Microsoft Word/ PowerPoint/ publisher) • Select certain areas of an image and resize, rotate, and invert the image. (Microsoft Word/ PowerPoint/ publisher) • Edit pictures using a range of tools in a graphics program. • Plan, create and edit a stop motion and animation using sound clips. (Stop motion studio) • Insert a picture/text/ graph from the Internet or personal files. Experiment with bold, italics, underlining, highlighting, and using word art. (Microsoft Word) Trim and arrange clips to convey meaning. • Add titles, credits, slide transitions and special effects. • Capture and use sounds with video to enhance.
Data Processing	Use 'Yes' and 'No' questions. • Sort muddled up data into categories. • Organise data, using given criteria. • Know that there can be alternative answers for a question. • Create 'Yes' and 'No' questions for given data. • Present their data using

Vocabulary	Alert Blocks of commands develop Flowchart plan Procedure Repeat Values	Address book Attachment Blog Cc Communication Compose Concept map Email Formatting PEGI rating Save to draft Send Spoof website Webpage Website	Advance mod animation audio Bar chat Block graph Branching database Charts design templates Field font Graphing line graph media Question slide slideshow Spin tool Stimulation Symbols = < > text box transition

Progression in Computing

Year Four

	Autumn	Spring	Summer
Unit			
Substantive Knowledge	**Coding** -Backgrounds can be changed and manipulated -Selection is a term used in computer programming. That it is a decision command that will be run dependent on whether a condition is met. -f statements are used to create selection in 2Code and that they are bits of code that will run only if a condition is true. -Coordinates are used in computer programming to determine the position of a point, shape or object and that these change according to where they are positioned on the screen. -Repeat until is a control block and that blocks of code will repeat until a condition is met -f/else statements are a conditional command that tests a statement. If a condition is true, commands inside the if block will run. If a condition is false, commands inside the else block will run. -Variables are a virtual container (A place in computer memory) that contain a value that can change. **Online Safety** -Safe protocols can be developed to protect people when using email. -Everything put online leaves a trail known as a digital footprint -There are risks and benefits of installing software including apps -copying the work of others and presenting it as their own is called 'plagiarism'. -There are positive and negative influences of technology on health and the environment. **Spreadsheets** -It is possible to input numbers into a spreadsheet in different formats including the use of a decimal point. -Formulas can be added to a spreadsheet to speed up calculations when data is changed. -A spreadsheet can create a range of graphs and charts and these can be interrogated. . -Spreadsheets can be used to model a real-life situation and improve the efficiency of day-to-day tasks. -A value can be added to images in 2Calculate to make a resource to teach place value	**Writing for different audiences** -Formatting including the style of font can affect the impact of a text. -Editing the formatting of the text makes a document fit for purpose. -Producing documents to meet a brief involves using appropriate formatting. **Logo** -Representations of shapes, letters and flowers can be created -The repeat command is a more efficient way to code in 2Logo. -It is important to test and debug code in 2Logo as with other coding platforms to ensure it runs effectively. **Animation** -Some animations are created by hand and others with the help of technology. -Onion skinning is a term used in animation and can make the animation process more efficient. -Sound can be added to animation to enhance the finished product -The term stop frame animation refers to animation where the stopping and starting of a camera gives an object the impression of movement. -	**Effective Search** -Information can be located on a search engine page -There are different skills needed to research effectively. -Web Pages need to be evaluated to see if the information contained is true and reliable. **Hardware Investigators** -Different parts make up a computer. **Making Music** -There are some main elements to music including pulse, rhythm, tempo, pitch and texture. -A piece of music can be altered by changing the rhythm and tempo. -A melodic phrase can be created using music software. -An electronic piece of music contains the key musical features.

Disciplinary Knowledge

E-Safety	.Know the reasons why we need to limit our technology use and explain the risks linked to it (health risks) • Know what a virus is and how we protect computers from harm. • Explain why they need to think carefully about how content they post might affect others, their feelings and how it may affect how others feel about them. • To become aware of 'fake news' and learn how to assess what they read.
Digital Fluency	.Create own folders and sub folders and re-arrange documents. Re-name folders. Delete folders . Log on and retrieve work for a range of different softwares. Retrieve documents and convert between. i.e. photos, videos into different softwares. . Use the mouse confidently with left click and right click options. . Shortcuts for copy and paste, undo, cut and paste etc. • Use Tab key for navigation!? • Shortcuts for bold, italics, underlining. • Touch typing . Formatting shapes and objects, bring to front move to back. (Media?) • Spell check and word count. • Using bullet points, letters and numbers for lists. • Insert and create tables.
Programming	Design and write a more complex programme to accomplish a specific goal. • Reason and explain how simple algorithms I have designed and written work. • Detect, correct and debug errors in algorithms. • Control/simulate physical systems with algorithms. • Solve problems within a program by breaking it into smaller parts. • Multiple sprites, creating own
Networking	Pupils send and respond to e-mails. • Pupils know the names of networking hardware (e.g. hubs, routers, switches) and the names of protocols (e.g. SMTP (Simple Mail Transfer Protocol), IMAP (Internet Message Access Protocol), POP (Post Office Protocol), FTP (File Transfer Protocol), TCP/ IP (Transmission Control Protocol/Internet Protocol), associated with networking computer systems). • Pupils now use technologies and online services securely, and knows how to identify and report inappropriate conduct. • Pupils know how 'packet data' is transferred around the world and how it can be 'corrupted' • Pupils are introduced to HTML (Hypertext Markup Language) and CSS (Cascading Style Sheets) and apply this knowledge to build a static website. • Pupils can edit a website and its contents using HTML (Hypertext Markup Language) and CSS (Cascading Style Sheets)
Multimedia	Be confident in creating & modifying text & presentation documents to achieve a specific purpose. • Layer graphical elements. • Use art programs & online tools to modify photos for a specific purpose using a range of effects. Align text left, right and centre. Explore the use of video, animation, & green screening for a specific audience. (Veescope Live Green Screen App) • Use ICT tools to create music phrases for a specific purpose.
Data Processing	Learn how to use a data logger. • Record data (from data logger) using tallies, charts and tables. • Learn what a spreadsheet is and what it is used for. • Record data (from data logger) into premade spreadsheet. • To organise data using a spreadsheet. • Save a spreadsheet. • Open a spreadsheet. • Learn how to retrieve simple information from a premade spreadsheet
Vocabulary	Abbreviations: RT, LT, BK, FD Code block Co-ordinates If/else Logo Motherboard Number variable Objects Prompt Prompt for input Repeat until Selection types Variable Variable value	Computer virus Cookies Copyright Identify theft Malware Phishing Plagiarism spam	Average Background Bold charts Flipbook formula Formula wizard Frame Italic Play Random tool Stop motion Timer Underline

Progression in Computing

Knowledge | St Paul's C.E Primary School | Courageous Advocacy

Computing

Year Five

	Autumn	Spring	Summer
Unit			
Substantive Knowledge	**Coding** -Code can be simplified to complete the same process with less lines of code. Simplified code runs faster and uses less processing memory, it is said to be more efficient. -A simulation is a model that represents a real or imaginary situation. Plans of an algorithm that represents a real or imaginary situation can be created and then used to program a simulation in 2Code. -The timer every command can be used to make code repeat forever. -Decomposition is a method of breaking down a task into manageable components. -Abstraction is a way of de-cluttering and removing unnecessary details to get a program functioning. -A function is a block or sequence of code that can be accessed when it is needed. -Strings are text or a combination of text characters and numbers within programs -Strings are text or a combination of text characters and numbers within programs **Online Safety** -The SMART rules are designed to keep children safe online. -Passwords need to be kept secure. -Care needs to be given when sharing content online. -Sources should be referenced in work. -Different forms of communication are best used for specific purposes. **Spreadsheets** -A formula can be written in a sheet to convert units of length and distance. -A spreadsheet tool can be used to investigate if a hypothesis is true -A spreadsheet can be used to model a real-life problem, in this case the area and perimeter of shapes -A spreadsheet can be used to convert days into weeks or years and vice versa. -Spreadsheets can be created to support the organisation of real-life events such as a school cake sale.	**Databases** -A database can be used to search for information. -Users can contribute to a collaborative database -Databases can be created to cover a range of topics or themes. **Game Creator** -It is important to plan out a game before commencing on making it -A game design program has specific functions for the designer to use. -The design of characters and quest items is a key aspect of game creation. -A finished game must be playable and possible for the player to complete -Evaluation is important so a game can be improved and made more playable and exciting **3D Modelling** -3D modelling can be done via a computer program. -Moving points changes the appearance of a 3D model. -A 3D design program can be used to meet a design brief. -Models need refining before they are printed out using a standard printer or 3D printer. -Refining a model is important prior to the final printing process. - Know what a STL file is.	**Concept Maps** -There is a need for visual representation when generating and discussing complex ideas. This can be represented in the form of a concept map. -A computer program can be used to create a concept map -A concept map can be used to retell information and stories. -Collaborative concept maps allow many users to contribute to the same map and therefore quickly and easily share ideas. **Word Processing** -A word processing tool can be used to create a range of documents. -Images can be added to a document -Images can be edited in Word using Word Wrap. -The look of text within a document can be changed. -Various features within the program will enhance the documents look and usability. -Tables can be used to present information within a document. -A template can be used to create a document. -Page layout can be improved by using headings and columns.
Disciplinary Knowledge			
E-Safety	.Distinguish between appropriate and inappropriate uses of technology (including excessive use)(link to mental health/social risks). • Know the risks and rewards of the internet. • Know a variety of ways to report concerns both on and offline. • Know how to use social media and online gaming apps effectively, while keeping an adult informed of their activity. • Know what copyright is and how to interpret information found online. • Know what adverts/ pop ups/ phishing emails are and how they are specifically targeted at individuals.		
Digital Fluency	Save as different programmes, i.e. save as PDF. Use task manager to solve problems. Use the mouse confidently and independently with left click and right click options. Touch typing. • Become familiar with common function keys, such as brightness, airplane mode, volume, play and pause, rotating screen, etc. Change position of text. Columns, align, change direction. • Orientation of page and margins. • Find and replace words and fonts. • Hyperlinks • Add, delete columns and rows. Using the mouse and enter for a new row.		
Programming	• Design and write an increasingly complex programme to accomplish a specific goal. • Reason and explain how more complex algorithms I have designed and written work. • Use sequence (putting algorithms in the correct order), selection (selecting the correct instructions) and repetition (selecting where coding can be copied/repeated) in programs. • Detect, correct and debug errors in algorithms. • Control/simulate physical systems with algorithms. • Solve problems within a program by breaking it into smaller parts. • Selecting different options for different sprites, costumes, loops		
Networking	Pupils understand role of the networking hardware and protocols associated with networking computer systems. • Pupils understands the client-server model process and the 'why' behind it. • Pupils know that including how dynamic web pages (web pages that display different things, depending on input) use server-side scripting and that web servers process and store data entered by users. • Recognises that persistence of data on the internet requires careful protection of online identity and privacy • Pupils can use search engines effectively and understand that search engines use 'web crawler programs'. Pupils can use this process safely and behave responsibly -independently report concerns. • Pupils can explain how search engines rank the results that appear • Pupils can identify a fake e-mails (spam, junk and phishing emails)		
Multimedia	Be able to use different filming techniques and camera angles e.g. zoom, panning, wide shot etc to create different mood/ perspective. • Plan a multi-scene animation including characters, scenes, camera angles and special effects. (iMovie / Clips) • Adjust the number of photographs taken and the playback rate to improve the quality of the animation. (iMovie / Clips) • Publish their animation and use a movie editing package to edit/refine and add titles. (iMovie / Clips) Know how to use text and video editing tools in programs to refine their work. (Clips) • Begin to use both hands to type. • Begin to use a range of functions to change text alignment, layout, insert tables. Collect sounds from a variety of sources (sound editing software, online, digital sound recorder.		
Data Processing	Input data confidently into a spreadsheet. • Edit a spreadsheet. • Create and use multiple pages in Spreadsheet. • Duplicate pages. • Learn simple formulas e.g. Total number of column/ one row minus another row. • Add formulas to premade spreadsheets. • Create a spreadsheet for a purpose and include a simple formula to solve a problem		
Vocabulary	2D 3D Abstraction Decomposition Function Interactive Modelling Perspective Physical system Playability Score Screenshot Simplify/simplified Stimulation Tab	Document Find Formatting Merge cells Record Sort, group and arrange Statistics and reports Table Text wrapping Word processing	Computer virus Cookies Copyright Identify theft Malware Phishing Plagiarism spam

Spirituality | Experiences

Progression in Computing

Computing	Year Six		
	Autumn	**Spring**	**Summer**
Unit			
Substantive Knowledge	**Coding** -Number elements combined with a number variable and an if/else statement can be used to create an onscreen countdown timer. Selection can be achieved through the use of if/else statements. -The coordinates of objects can be used in code such as moving the position of them. -The launch command can be used to open a file or an external website when it is called in a program. -Tabs can be used to help organise code. -Using functions helps with making programs more efficient. Flowcharts can represent procedures within a program. Flowcharts can be referenced when a program is executed to test whether a program is running as expected according to the flowchart. -Input is defined by information going into a computer **Online Safety** -A game can be created to encourage the player to think about online safety. -A digital footprint leaves a trail online to show their behaviour and this can have a negative impact. -It is important to balance game and screen time with other parts of our lives **Spreadsheets** -A spreadsheet can be used to investigate a problem such as the frequency of a number rolled on a collection of die -A formula can be used to work out the new prices -A spreadsheet can be used to plan how to spend money	**Blogging** -A blog is an online vehicle for displaying thoughts and ideas in an informal style. -It is important to plan out the theme and content of a blog before writing it. -People can contribute to blogs by adding their own posts. -Blog posts written by others can be commented on. -Know the difference between a vlog and a blog **Text Adventures** -A text adventure is a computer game that uses text instead of graphics -A concept map plans for a story adventure can be used to plan the text-based adventure game -It is important to have a good level of coding comprehension in order the understand how a text adventure works. -Debugging is a key part of coding and essential if code is to run properly. **Networks** -LAN and WAN are different kinds of networks. -The Internet has changed our lives in many ways. -understand and explain the difference between the internet and the World Wide Web. - Know what a WAN and LAN are and can describe how they access the internet in school.	**Quizzing** -The level, interests and capability of the audience need to be considered when making a game for younger children. -A good quiz to appeal to younger students and their peers should have a range of different question types. -There are a range of software tools for creating quizzes to improve grammar skills. -A quiz can be made to teach students how to interrogate a database. -A range of questions can be used to produce a quiz linked to a curriculum area. **Understanding Binary** -Binary is a number system using only 1 and 0 and is how data in a computer is saved and used. -All denary numbers can be represented in binary. For example counting in binary from zero to 15, or writing a friend's age in binary -It is possible to represent the state of an object in a game as active or inactive using the respective binary values of 1 or 0 **Spreadsheets** -There are key features of a spreadsheet, and data can be entered into cells. -Formulae can be entered into a spreadsheet, and this can save time and make working more efficient -A spreadsheet can be used to model a situation. -Formulae can be used for percentages, averages, max and min in spreadsheets -A spreadsheet program can display a variety of graphs and charts. -A spreadsheet can be created to model a real-life situation. -Spreadsheets can be used to solve a given problem.
Disciplinary Knowledge			
E-Safety	Know how to protect themselves from being victims of cyberbullying and causing harm to others. • Know how to respect others online and understand their responsibility for how their information affects others. • Know what the CEOP button is and why it is important in keeping safe online. • Describe ways in which some online content targets people to gain money or information illegally and can describe strategies to help them identify such content. • Learn how to use the skills they have to respond to any challenges they might face when they leave primary school.		
Digital Fluency	.How to save and retrieve data from an online platform. To password protect. Knowing that a password protected document can still be deleted without knowing the password, it just can't be accessed. (E-safety) .Confidently use computers to turn on and log in with own password, as well as ipads. Be able to search, open and use familiar programmes independently and apply what they know to open unfamilar programmes. .Use the mouse confidently and independently with left click and right click options, for different purposes to achieve given goals. .Become more confident with touch typing and use touch typing for all letters. .Insert tables, draw, rub out, merge cells and edit.		
Programming	• Design and write an increasingly complex programme to accomplish a specific goal following a design brief. • Reason and explain how all algorithms I have designed and written work and how they fit into the design brief. • Use sequence (putting algorithms in the correct order), selection (selecting the correct instructions) and repetition (selecting where coding can be copied/repeated) in programs. • Work with variables (values that will change depending on the outcomes of situations) and various forms of input (mouse, keyboard, swiping, tilting) and outputs (sound, points, pictures, character changes, etc) • Detect, correct and debug errors in algorithms that now include variables. • Control/simulate physical systems with algorithms. • Solve problems within a program by breaking it into smaller parts. • Design and create their own game using all of the above. • Variables – lives, points		
Networking	Pupils understand role of the networking hardware and protocols associated with networking computer systems. • Pupils understands the client-server model process and the 'why' behind it. • Pupils know that including how dynamic web pages (web pages that display different things, depending on input) use server-side scripting and that web servers process and store data entered by users. • Recognises that persistence of data on the internet requires careful protection of online identity and privacy • Pupils can use search engines effectively and understand that search engines use 'web crawler programs'. Pupils can use this process safely and behave responsibly -independently report concerns. • Pupils can explain how search engines rank the results that appear • Pupils can identify a fake e-mails (spam, junk and phishing emails)		
Multimedia	Use internet-based software to create a 3D representation. • Collect information and media from a range of sources (considering copyright issues) into a presentation for a specific audience. • Use the tools available to design their own fit for purpose object. • Use sound, images, text, transitions, hyperlinks, and HTML code effectively in presentations. • Evaluate and present final 3D design. Use both hands to type. • Confidently use a range of functions to change text alignment, layout, insert tables. • Copy and paste within specific texts. Storyboard and capture videos for a purpose. • Plan for the use of special effects and transitions. • Trim, arrange and edit audio levels and video clips to improve quality of their outcome. • Export their video. • Create and edit a presentation and add text.		
Data Processing	• Read and compare spreadsheets. • Create and edit a spreadsheet. • Input more challenging formulae e.g. multiplying an amount/ dividing an amount. • Create a chart from spreadsheet they have made. • Label axes on charts		
Vocabulary	Recap all previous vocabulary npit launch command	Recap all previous vocabulary Blog post Calculate Cell reference Count (how many tool) Icon Range Row Sum style Workbook	Recap all previous vocabulary called Developer Get input Launch command Router User input LAN local area WAN wide area