Computing

End of year expectations

Year	Topic	National Curriculum Objectives	Key Knowledge	Enrichment (Apps and Sites to enhance and inspire learning)	Key Vocabulary
EYFS	E-Safety	➢ Explain the reasons for rules, know right from wrong and try to behave accordingly ➢ Express their ideas and feelings about their experiences ➢ Explain the reasons for rules, know right from wrong and try to behave accordingly ➢ Safely use and explore a variety of materials	➢ Understand what personal information is and why we keep personal information private. ➢ Understand why websites want personal information. ➢ Identify when and where to go for help when concerned. ➢ Understand the dangers of sharing photos online? ➢ Understand that people online are not always who they say they are. ➢ Understand how to trust information online. ➢ Learn to use the Internet responsibly. ➢ Understand why we should be respectful.	Hectors World	▪ Safe ▪ Online ▪ Personal information ▪ Sharing ▪ Permission ▪ Trust ▪ Report ▪ Respect
	Computer Discovery	➢ Understanding the world ➢ Communication and language	➢ Children recognise that a range of technology is	Different types of computer and components	▪ Tools ▪ Computers ▪ Purpose

			used in places such as home and schools ➢ Listening and Attention, Understanding, Speaking	(to be used in continuous provision)	▪ Laptop ▪ Monitor ▪ Headphones ▪ Tablet ▪ iPad ▪ Printer ▪ Digital camera ▪ Keyboard ▪ Mouse ▪ Desktop ▪ Speakers
	Mouse and Keyboard skills	➢ Develop their small motor skills so that they can use a range of tools competently, safely and confidently. ➢ Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	➢ Move the mouse or trackpad and left click to select an object. ➢ Drag and drop with mouse or trackpad to move objects around the screen. ➢ Find letters or numbers on keyboard. ➢ Begin touch typing with home row keys.	ABCya! Has a range of games to practise moving a mouse and left clicking Code.org Has a range of activities to help children learn to drag and place	▪ Mouse ▪ Trackpad ▪ Courser ▪ Left button ▪ Scroll wheel ▪ Home row
	Digital photos and Video Early Music Creation	➢ Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.	➢ Children recognise that a range of technology is used in places such as homes and schools.	Puppet Pals Augmented Reality Do ink Green Screen Chatterpix AR Makr	▪ Rhythm ▪ Melody ▪ Tempo

	Digital Literacy and Numeracy Digital Art and Design	➢ They select and use technology for a particular purpose ➢ Represent own ideas through music ➢ Knows that information can be relayed in the form of print ➢ Interacts with age-appropriate computer software ➢ Knows that information can be retrieved from a computer ➢ Uses simple tools and techniques competently and appropriately ➢ Selects appropriate resources and adapts them where necessary ➢ Explores how colours can be changed ➢ Chooses particular colours to use for a purpose	➢ To understand the different ways photos and videos can be taken then how they can be used and shared. ➢ Understand that different instruments make their own sound and that instruments can be divided into groups. ➢ Create a rhythm using a pattern of beats. ➢ Create digital sounds using patterns and shapes. ➢ Create a simple melody using patterns and adjust tempo.	Springroll A great early music site that allows children to explore and create with different instruments and composing music	
	Early Programming	➢ Knows how to operate simple equipment (30-50 months) ➢ Give explanations (Speaking 30-50 months) ➢ There is no specific mention of coding in the Early Years statements but links can be	➢ Place instructions into the correct order (sequence) to make something work. ➢ Use direction arrows to move an on-screen object (character/sprite) to achieve an objective.	Code-a-pillar	▪ Sequence ▪ Algorithm ▪ Predict ▪ Execute ▪ Debug

		made to other areas such as Mathematics (sequencing) and Physical Development.	➢		
Year 1	E-Safety	➢ Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	➢ Understand what personal information is and why we keep personal information private. ➢ Understand why websites want personal information. ➢ Identify when and where to go for help when concerned. ➢ Understand the dangers of sharing photos online? ➢ Understand that people online are not always who they say they are. ➢ Understand how to trust information online. ➢ Learn to use the Internet responsibly. ➢ Understand why we should be respectful.	Hectors World Jesse and Friends	▪ Safe ▪ Online ▪ Personal information ▪ Sharing ▪ Permission ▪ Trust ▪ Report ▪ Respect
	Mouse and Keyboard Skills	➢ Use technology purposefully to create, organise, store, manipulate and retrieve digital content	➢ Move the mouse or trackpad and left click to select an object. ➢ Drag and drop with mouse or trackpad to	ABCya! Has a range of games to practise moving a mouse and left clicking	▪ Mouse ▪ Trackpad ▪ Courser ▪ Left button ▪ Scroll wheel

			move objects around the screen. ➢ Find letters or numbers on keyboard. ➢ Begin touch typing with home row keys.	Code.org Has a range of activities to help children learn to drag and place	▪ Home row.
	Digital Art 3D Design Text and Images Music Creation	➢ Use technology purposefully to create, organise and manipulate digital content. EYFS ➢ Explore how sounds can be changed (30-50 months) ➢ Explore different sounds of instruments (40-60 months) ➢ They select and use technology for a particular purpose (Early Learning Goals) ➢ Represent own ideas through music (Early Learning Goals)	➢ Change the colour of individual pixels to accurately re-create basic artwork. ➢ Make changes where required. ➢ Change the colour of individual pixels to accurately re-create detailed artwork ➢ Change the colour and pattern of elements. ➢ Position and rotate objects on a design. ➢ Position objects in relation to each other. ➢ Resize, rotate, flip and arrange objects behind/in front of each other. ➢ Add, move and resize images. Add text and adjust size and placement.	Digipuzzle Allows children to create different images and designs using pixels Springroll ABCya! Junior Infant Tools Paint website ABCYa Colour, Paint and Draw website	▪ Pixels ▪ Grid ▪ Fill ▪ Check ▪ 3D ▪ Rotate ▪ Flip ▪ Arrange (pictures of these buttons for reference would be useful) ▪ Icon ▪ Undo ▪ Delete ▪ Rhythm ▪ Melody ▪ Tempo

			➢ Add, resize and place images on a page then add and position text to label and describe images. ➢ Use word banks to write sentences about images. ➢ Understand that different instrument make their own sound and that instruments can be divided into groups. ➢ Create a rhythm using a pattern of beats. ➢ Create digital sounds using patterns and shapes. ➢ Create a simple melody using patterns and adjust tempo.		
	Comic Creation	➢ Key Stage 1: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. ➢ Key stage 2: Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of	➢ Know the advantages of creating comics digitally (e.g speed of production) ➢ Know the different aspects of a comic; scenes, backgrounds, characters, narration, speech bubbles and stickers.	Make Beliefs Comix website	▪ Panel ▪ Narration ▪ Stickers ▪ Scale ▪ Arrange ▪ Flip

		programs, systems and content that accomplish given goals	➢ Know how to add, resize and organise colour or picture backgrounds. ➢ Know how to add, resize, organise characters/objects to different panels. ➢ Know how to add narration using text and direct speech using speech bubbles.		
	Introduce Programming	➢ Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. ➢ Create and debug simple programs. ➢ Use logical reasoning to predict the behaviour of simple programs.	➢ Place instructions into the correct order (sequence) to make something work. ➢ Use direction arrows to move an on-screen object (character/sprite) to achieve an objective. ➢ Predict a route and sequence direction commands (algorithm) to achieve an objective. Correct the errors if necessary (debug). ➢ Sequence code blocks, including movements and execute (start program) blocks to write a program to achieve an objective.	Code a Cake code.org website	▪ Sequence ▪ Algorithm ▪ Predict ▪ Execute ▪ Debug

Year 2	E-Safety	➢ Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	➢ Understand what personal information is and why we keep personal information private. ➢ Understand why websites want personal information. ➢ Identify when and where to go for help when concerned. ➢ Understand the dangers of sharing photos online? ➢ Understand that people online are not always who they say they are. ➢ Understand how to trust information online. ➢ Learn to use the Internet responsibly. ➢ Understand why we should be respectful.	Hectors World Jesse and Friends Why is it important to be responsible on the internet? Chicken Clicking is the story of a chick who sneaks into a farm to use the Internet and soon gets caught in the trappings of online shopping and profiles. The 'Troll Stinks' book introduces younger pupils to cyberbullying and respecting people online.	▪ Personal information ▪ Sharing ▪ Permission ▪ Trust ▪ Report ▪ Respect
	Recognise uses of IT	➢ Recognise common uses of information technology beyond school.	➢ Recognise common uses of information technology beyond school; ➢ Understand computers store and follow instructions. ➢ Spot digital technology in school or at home.	BBC Go Digital Offers a range of games for the children to play that explores the different uses of technical, IT and digital equipment.	▪ Microprocessor ▪ Analogue ▪ Digital

			➢ Find a piece of computer equipment amongst day to day objects and choose the correct definition. ➢ Understand how different technology helps us.		
	Digital Art	➢ Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	➢ Use lines and fill tools to make interesting patterns. ➢ Add a variety of shapes (outlines and fill) and label them with text. ➢ Re-create a graphic using pixels of different colours.	PixilArt website Lets children create art based on themes, and lets them explore through pixels	▪ Pixels ▪ Fill ▪ Text ▪ PNG and GIF
	Animation	➢ Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	➢ Add a background and objects to a frame (including text) ➢ Copy/clone a frame and move objects to create an animation, including flipping objects. ➢ Create an animation with multiple objects moving simultaneously. ➢ Create screen-recording animation (optional, requires iPad).	Junior Infant Tools animate website ABCYa Make An Animation website. Puppet Pals app	▪ Frame ▪ Clone ▪ Onion skin ▪ Frame rate

			➢ Create stop-motion animation with photos (optional, requires iPad).		
	Introduce Data Handling	➢ Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	➢ Understand what data is and collect it as a tally. ➢ Use software to label a pictogram and add data to each column. ➢ Edit a table with correct titles and numbers. ➢ Use software to create a bar chart/pie chart/line chart suitable for the data. ➢ Interpret a pictogram/bar chart/line chart.	Junior Infant Tools Chart website How younger pupils can collect data and present it in different charts.	▪ Table ▪ Pie chart ▪ Bar chart ▪ Pictogram
	E-book Creation	➢ Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	➢ Add a book cover with title, author, colour and image. ➢ Add multiple pages based on a theme. ➢ Add text on different pages. ➢ Add images on different pages to match the theme/text ➢ Add voice recordings to match the text and theme.	www.writereader.com Write Reader allows pupils to add their own images so books can be made about any topics. For example, pupils could take screenshots of their digital work, add these images to their books, then record how they were created.	▪ Fill ▪ Images ▪ Record ▪ New page ▪ Delete ▪ Share Images may wish to be displayed with these from the site.

	Programming	➢ Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. ➢ Create and debug simple programs. ➢ Use logical reasoning to predict the behaviour of simple programs.	➢ Place instructions into the correct order (sequence) to make something work. ➢ Use direction arrows to move an on-screen object (character/sprite) to achieve an objective. ➢ Predict a route and sequence direction commands (algorithm) to achieve an objective. Correct the errors if necessary (debug). ➢ Sequence code blocks, including movements and execute (start program) blocks to write a program to achieve an objective. ➢ Program movements. ➢ Program outputs for audio or text. ➢ Find errors in a program (debug). ➢ Program inputs (touch or clicking) ➢ Program selection/conditions (if statements).	code.org website Scratch	▪ Sequence ▪ Algorithm ▪ Predict ▪ Execute ▪ Debug ▪ Outputs ▪ Inputs ▪ Loops ▪ Selection

Year 3	E-Safety	➢ Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	➢ Understand what to do if something upsets you online. ➢ Understand why and how people can be nasty online. ➢ Describe the term 'sharing online' and why we need to get permission to share photos and videos of other people. ➢ Understand why people pretend to be someone else online. ➢ Understand why we only talk to people we know in the real world, when online. ➢ Understand why we should not always trust what we read online and how to check ➢ Understand the importance of being kind in the real world and also online.	Band Runner includes is a platform game that covers many of the scenarios from the videos above as a quiz built into a platform game. There are instructions at the start. The Kindness Kingdom is a platform where pupils need to get to the top by sharing kindness online. It is a good way to encourage respecting people online.	▪ Personal information ▪ Sharing ▪ Permission ▪ Trust ▪ Report ▪ Respect

	Comic Creation Digital Storyboard	➢ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals.	➢ Comic creation covers a wide range of objectives including: ➢ Add, resize and organise colour or picture backgrounds. ➢ Add, resize, organise characters/objects to different panels. ➢ Add narration using text and direct speech using speech bubbles. ➢ Add and edit backgrounds. ➢ Add and edit characters, including changing posture, expression and clothing. ➢ Add narration and speech bubbles, including formatting text. ➢ Duplicate objects to match scenes. ➢ Search for objects to use.	Make Beliefs Comix website StoryboardThat	▪ Panel ▪ Narration ▪ Flip ▪ Sticker ▪ Scale ▪ Arrange
	Digital Art Music Creation	➢ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and	➢ Use various lines and fill tools plus copy/paste and rotation to create pattern effects.	PixilArt website Music Lab Song Maker Isle of Tunes	▪ Rotation ▪ Zoom ▪ Flip ▪ Symmetry

	3D Design	create a range of programs, systems and content that accomplish given goals. ➢ In the Computing Curriculum these activities fall under use software (including internet services) to design and create content that accomplishes given goals. There are also clear links with the Music Curriculum to 'understand and explore how music is created.'	➢ Use shapes, fill, copy/paste, zoom and flip to create reflective symmetry effects. ➢ Use stamps, copy/paste, layers and multiple frames to create animated GIF computer game graphics. ➢ Create ascending and descending scales. ➢ Add chords evenly across the scales. ➢ Add arepeggios and melodies. ➢ Add a steady and even rhythm. ➢ Use sampled sounds to create an effective mix. ➢ Build beats, melody (tones) and effects. ➢ Understand and use 3D space on a grid. ➢ Re-create or design familiar 3D models using cubes, such as tables and chairs.	Incredibox Version 4 3D puzzle website 3D Slash website	▪ Stamp ▪ GIF ▪ Scales ▪ Chords ▪ Arpeggio ▪ Bars and beats ▪ Sampled sound ▪ Effects ▪ 3D ▪ Rotate ▪ Zoom ▪ Grid ▪ Chisel, hammer and trowel ▪ Spray ▪ Bucket

			➢ Use chisel tool to improve and adapt models. ➢ Colour individual blocks or whole models.		
	Programming	➢ Design, write and debug programs that accomplish specific goal, including simulating physical systems. ➢ Use sequence and repetition in programs; work with various forms of input.	➢ Create a 3D place using various design tools ➢ Write a program to control a character using inputs ➢ Write a program with conditions to create an if statement (If the character touches an object it will disappear) ➢ Add a multi-player aspect ➢ Write a program with variables (scoring system) ➢ Program operators (equals) to achieve a score and win game ➢ Design, write and debug programs that accomplish specific goals. (Including outputs) ➢ Use repetition in programs. (Activity 2)	Scratch Kodu provides a platform for pupils to use the programming skills they have acquired so far into a more open-ended and creative environment. Kodu is a good introduction to programs like Scratch, particularly in Year 3, where pupils can become familiar with words such as sequence, inputs and conditions.	▪ Sprite ▪ Stage ▪ Sequence ▪ Debug ▪ Loops or repetition ▪ Inputs

			➢ Work with various form of inputs; keyboard, mouse and touch screen. ➢ Write programs that simulate physical systems		
	Document Creation Infographics Branching Databases	➢ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals. ➢ Collect, classify and present data	➢ Copy and paste text and images ➢ Find and replace words ➢ Format text for a purpose ➢ Edit images inside documents ➢ Add bullet points to make lists ➢ Experiment with keyboard shortcuts ➢ Understand what an infographic is and why we use them. ➢ Search for and add suitable graphic elements. ➢ Add and format suitable titles and text. ➢ Label an image using arrows. ➢ Add and label objects.	iLearn2 provides useful video's and a teaching sequence to help students edit and create a document. Canva website Junior Infant Tools Branch website	▪ Word processor ▪ Find and replace ▪ Format ▪ Text wrapping ▪ Bullet points ▪ Keyboard shortcuts

			➢ Ask questions to sort (classify) objects correctly		
Year 4	E-Safety	➢ Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	➢ Understand what to do if something upsets you online. ➢ Understand why and how people can be nasty online. ➢ Describe the term 'sharing online' and why we need to get permission to share photos and videos of other people. ➢ Understand why people pretend to be someone else online. ➢ Understand why we only talk to people we know in the real world, when online. ➢ Understand why we should not always trust what we read online and how to check ➢ Understand the importance of being kind in the real world and also online.	Band Runner includes is a platform game that covers many of the scenarios from the videos above as a quiz built into a platform game. There are instructions at the start. The Kindness Kingdom is a platform where pupils need to get to the top by sharing kindness online. It is a good way to encourage respecting people online.	▪ Personal information ▪ Sharing ▪ Permission ▪ Trust ▪ Report ▪ Respect

	Animation	➢ Select, use and combine a variety of software on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals.	➢ Understand that stop-motion is a series of pictures that are slightly different and they appear to move when played one after other. ➢ Know how to create a stop-motion video by duplicating slides that include backgrounds and shapes. ➢ Know how to use transition and animation effects in presentation software. ➢ Know how to animation individual parts of objects to create realistic animation. ➢ How to create animated pixel animation and save it as GIF file (short animation on a loop).	Wick Editor website It allows pupils to animate individual elements of objects. Piskel App website	▪ Frame ▪ Onion skin ▪ Clone ▪ Timeline ▪ Frame rate ▪ Transition ▪ GIF
	Programming	➢ Design, write and debug programs that accomplish specific goals. ➢ Use sequence, selection, and repetition in programs; work	➢ Know that sprites can be controlled in different ways using keyboard or touch screen inputs.	Scratch PRIMM question sheets (Predict, Run, Investigate, Modify,	▪ Inputs ▪ Selection ▪ Sensing ▪ Variables ▪ Debug

		with various forms of input and output. ➢ Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	➢ Know that sprites can be programmed to sense other sprites or colours then make decisions. (Eg, a car sprite could win the game if it touches a blue finish line or go back to start if it touches the green off the track.) ➢ Know how to program variables, including data variable that can used to add a scoring system.	Make), which pupils can try before and during their work on the activity pack. PRIMM can help pupils develop a deeper understanding of programming.	
	Internet Research	➢ Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	➢ Understand how search results are selected and ranked and show awareness of different strategies for finding specific information. ➢ Understand the features of an Internet Browser. ➢ Use search technologies (different websites) to find specific pieces of information. ➢ Reference the correct source of information.	Swiggle, Kiddle, Kidrex and DK Find Out A range of safer search engines designed for children	▪ Internet browser ▪ Search engine ▪ Web address and address bar ▪ www ▪ Ranking

			➢ Be discerning in evaluating digital content. ➢ Check the internet for fake news by cross-referencing facts.		
	Data Handling	➢ Collecting, analysing, evaluating and presenting data and information.	➢ Know how to change appearance of cells in a spreadsheet (fill colour and border) then add and align text. ➢ Know how to Find and add data to a spreadsheet, resize cells and use the software to create a suitable chart with a title.	Excel on Windows, Numbers on an iPad or Google Sheets	▪ Spreadsheet ▪ Cell ▪ Pie chart ▪ Bar chart ▪ Line graph
	3D Design E-Book Creation Video Editing	➢ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals.	➢ Understand 3D spacial awareness. ➢ Add 3D shapes, resize, adjust height, duplicate and use the different perspective. ➢ Re-create different types of buildings using 3D shapes. ➢ Create roads/paths by adjusting the height of 3D shapes.	TinkerCAD Mecabricks website. Book Creator E-book creation allows teachers and pupils to use a range of different content/tools (text, audio, drawings, video etc) and communicate this in a singular document.	▪ 3D ▪ Rotate ▪ Zoom ▪ Grid ▪ Chisel, hammer and trowel ▪ Spray ▪ Bucket ▪ Page shape ▪ Add content ▪ Inspector ▪ Hyperlinks

			➢ Add windows and door shapes. ➢ Add, move, change colour and duplicate a brick. ➢ Rotate bricks. ➢ Use sloping bricks and special bricks for a purpose. ➢ Change the transparency of bricks. ➢ Add page colour and style then position and format text. ➢ Add and position images from camera/internet. ➢ Add audio, including hiding it behind an object. ➢ Add hyperlinks to text and images. ➢ Add and format shapes. ➢ Use hyperlinks for navigation. ▪ Add scene images. ▪ Add scripted voiceover audio, adjust the volume	Kapwing video editing website Vocaroo	▪ Preview ▪ Clips ▪ Timeline ▪ Split ▪ Transitions ▪ Titles ▪ Voiceovers ▪ Export

			and crop clips (including splitting a clip). ▪ Add more clips and use transition effects. ▪ Add titles. ▪ Use elements such as shapes. ▪ Add music background music and adjust the volume. ▪ Export a project		
	Inside a computer	➢ Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	➢ Understand what important parts of inside a computer or mobile device do to help with the performance (CPU, Fan, Hard Drive, RAM, Graphics Card). ➢ Understand that memory is measured in bytes and gigabytes. ➢ Use search filters on websites to find suitable information.	https://www.ilearn2.co.uk/	▪ Core Processing Unit CPU ▪ Fan ▪ Hard drive ▪ Random Access Memory RAM ▪ Graphics card
Year 5	E-Safety	➢ Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable	➢ Understand to keep personal information private.	Jigsaw Video The Jigsaw video is an older resource but it shares a great message	▪ Personal information ▪ Sharing ▪ Digital footprint

		behaviour; identify a range of ways to report concerns about content and contact.	➢ Respect and protect against online bullies. ➢ Understand the consequences of sharing photo/videos online. ➢ Understand the term digital footprint. ➢ Check online content is trustworthy. ➢ Understand how, where and who can we report concerns we have to. ➢ Understand the pitfalls of in-app purchases.	about how we try to stay safe in the real world but cannot apply the same rules to our online activity. The Fake Text Message website allows teachers (and pupils) to create a fake text message conversation.	▪ Report ▪ Trust ▪ Respect ▪ In-App purchasing
	Programming	➢ Design, write and debug programs that accomplish specific goals; solve problems by decomposing them into smaller parts. ➢ Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. ➢ Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	➢ Know that sprites can be controlled in different ways using keyboard or touch screen inputs. ➢ Know that sprites can be programmed to sense other sprites or colours then make decisions. (Eg if a ball sprite touches the colour of a goal it scores a point.) ➢ Know how to program variables, including random variables that can	Scratch Sphero	▪ Inputs ▪ Selection ▪ Sensing ▪ Variables ▪ Debug

			be used to make a game unpredictable. ➢ Understanding Bluetooth Technology as Input Device ➢ Write programs for the Sphero using movement and repetition (loops). ➢ Write a program to trace a maze/route with Sphero and De-bug. ➢ Write a program with outputs. ➢ Write a program with random variables		
	Text-based Programming	➢ Use sequence and repetition in programs; work with variables. Correct errors.	➢ JavaScript and Logo are text-based programming languages that use letters, numbers and symbols to program interactive elements (JavaScript) or an on-screen turtle to move or draw (Logo). ➢ Text-based programming commands need to be typed accurately, one tiny mistake could stop the	Turtle Academy CodeMonkey website BitsBox website ArtKano website	▪ JavaScript ▪ Logo ▪ Function ▪ Loops or repetition ▪ Variables

			whole program from working correctly. ➢ Programming in JavaScript and Logo will help you then program in Python (used by Google to program YouTube) and HTML (used to program websites).		
	Programming Physical Devices	➢ Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems. ➢ Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.	➢ Understand that computers use physical inputs and outputs and give examples. ➢ Program physical inputs, outputs and random variables. ➢ Label parts of a Microbit. ➢ Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems.	Microbit	▪ Microbit ▪ Outputs ▪ Inputs ▪ Accelerometer ▪ Processor
	App Design	➢ Select, use and combine a variety of software on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals.	➢ Use the tools in different presentation software (PowerPoint, Keynote, Google Slides) to design an app about your school with:	PowerPoint, Keynote (iPad) or Google Docs	▪ Screen dimensions ▪ Icons ▪ Navigation ▪ Hyperlinks ▪ Duplicate

			➢ Slide size and background colour ➢ Text and Images (including transparent images) on different pages ➢ Icons ➢ Interactions using hyperlinks		
	Data Handling	➢ Select, use and combine a variety of software (including internet services). Collecting, analysing, evaluating and presenting data and information.	➢ Know how to select and use non-adjacent cells plus resize multiple cell widths and copy/paste cells. ➢ Know how to find data and create a spreadsheet to suit it. ➢ Know how to use formulae to find totals, averages and maximum/minimum numbers. ➢ Know how to search a database for specific information.	Excel on Windows, Numbers on an iPad or Google Sheets	▪ Spreadsheet ▪ Cell ▪ Formula ▪ Database ▪ Record ▪ Field ▪ Sort
	Computer Networks and the Internet	➢ Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the	➢ Understand Computer Networks, Internet and Cloud Computing and how they help us.	https://www.ilearn2.co.uk/	▪ Server ▪ Router ▪ Firewall ▪ IP Address

		opportunities they offer for communication and collaboration.	➢ What is email and how can we use it safely? ➢ Understand how and why we collaborate online (including blogging)		▪ Wireless Access Point WAP ▪ Cloud computing
	E-book Creation	➢ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals.	➢ Add page colour and style ➢ Add, position and format text on different pages ➢ Add and position images ➢ Add audio, including hiding it behind an object. ➢ Add hyperlinks to text and images ➢ Search for shapes ➢ Lock and arrange shapes	Book Creator	▪ Page shape ▪ Add content ▪ Inspector ▪ Hyperlinks ▪ Preview
	Music Creation	➢ Select, use and combine a variety of software (including internet services) on a range of digital devices to design content that accomplish given goals.	➢ Layer tracks using sounds and effects. ➢ Create effective instrument tracks. ➢ Edit tracks and effectively adjust volume and add effects.	Beepbox Sampulator	▪ Scales ▪ Chords ▪ Arpeggio ▪ Bars and beats ▪ Sampled sound ▪ Effects
Year 6	E-Safety	➢ Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour;	➢ Understand what to do if something upsets you online. ➢ Understand why and how people can be nasty online.	Band Runner Doppelme.com website The Kindness Kingdom	▪ Personal information ▪ Sharing ▪ Report ▪ Permission ▪ Trust

		➢ identify a range of ways to report concerns about content and contact.	➢ Describe the term 'sharing online' and why we need to get permission to share photos and videos of other people. ➢ Understand why people pretend to be someone else online. ➢ Understand why we only talk to people we know in the real world, when online. ➢ Understand why we should not always trust what we read online and how to check ➢ Understand the importance of being kind in the real world and also online.		▪ Respect
	Programming	➢ Design, write and debug programs that accomplish specific goals; solve problems by decomposing them into smaller parts. ➢ Use sequence, selection, and repetition in programs; work	➢ Know that sprites can be controlled in different ways using keyboard or touch screen inputs. ➢ Know that sprites can be programmed to sense other sprites or colours then make decisions.	Scratch Code Combat website Python editor Chatbot website	▪ Inputs ▪ Operators ▪ Sensing ▪ Variables ▪ Broadcasts ▪ Syntax ▪ Print

		with variables and various forms of input and output. ➢ Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	➢ Know how to program variables, including random variables that can be used to make a game unpredictable. ➢ Know how to program operators to add sums. ➢ Know how to program broadcasts, to send messages between sprites. ➢ Know how to use a Python editor to print text and use special functions (new line and speech marks). ➢ Know how to use Python to program sums and answers (calculator) ➢ Know how to program a loop to repeat text. ➢ Know how to program inputs to create an interactive program (typing answers to questions). ➢ Find errors in a program (debugging)		▪ Range

			➢ Use the send message function to create a chat program.		
	Graphic Design	➢ Select, use and combine a variety of software on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals	➢ Know how to add, adjust and fill shapes. ➢ Know how to group shapes to improve accuracy and speed. ➢ Know how to add and customise gradient effects. ➢ Know how to adjust transparency/opacity for a purpose. ➢ Know how to use a colour picker correctly (Keynote and PowerPoint only). ➢ Know how to accurately rotate shapes.	PowerPoint, Keynote (iPad) or Google Slides	▪ Grouping ▪ Gradient ▪ Transparency/ opacity ▪ Colour picker ▪ Arrange
	Computers: Past, Present and Future	➢ Design and create digital content to accomplish goals. ➢ Use search technologies effectively and be discerning in evaluating digital content.	➢ Design and create digital content to accomplish goals ➢ Use search technologies effectively and be discerning in evaluating digital content ➢ Understand how technology has changed	Microsoft Word or PowerPoint The National Museum of Computing The Code Show	

			over time and represent it as an interactive timeline. ➢ Understand the impact (positive/negative) technological changes have on society. ➢ Predict how technology will change in the future.		
	Binary	➢ Understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits. (Key Stage 3) ➢ Binary is excellent for mental maths involving addition	➢ Know that binary is how computers work and is made up of a sequence of zeros and ones (or on and off). ➢ Know how to match a sequence of binary code to create digital art. ➢ Know how to convert binary numbers to denary number (numbers we understand) and visa-versa by understanding that the position of the zeros and ones on a grid of 1, 2, 4, 8, 16, 32, 64, 128.	Digipuzzle Binary Code Mosaics website	▪ Binary ▪ Denary numbers ▪ Translate/covert
	Image editing	➢ Select, use and combine a variety of software (including internet services) on a range of	➢ Adjust the colours, brightness and contrast to improve a photo.	Pixlr X website Google Maps	▪ Crop ▪ Aspect ratio ▪ Filters

		digital devices to design and create a range of programs, systems and content that accomplish given goals.	➢ Create a before and after slide in presentation software. ➢ Take and crop a screenshot. ➢ Add drawing and text layers. ➢ Import new images as layers and resize them to fit.		▪ Colour editing ▪ Light editing ▪ Sharpen ▪ Blur ▪ Smooth ▪ Grain ▪ Brightness ▪ Exposure ▪ Contrast ▪ Highlight ▪ Shadows ▪ Saturation ▪ Temperature ▪ Vibrance ▪ Tint
	Programming in HTML	➢ Design, write and debug programs that accomplish specific goals; solve problems by decomposing them into smaller parts. ➢ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals,	➢ Add and align text and change colour. ➢ Program background colour. ➢ Add and align images. ➢ Add hyperlinks to other websites. ➢ Add an iframe (such as a Google Map) and adjust the height and width	JS Fiddle website Google Maps	▪ Hyperlinks ▪ Tags ▪ Hexadecimal colours

		presenting data and information. ➢ Use a textual programming language to solve a variety of computational problems. (Key Stage 3)			
	Virtual Reality	➢ Design and create digital content to accomplish goals. ➢ Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.	➢ What virtual reality is and how it can be used to help people. ➢ Add, move and resize objects in a virtual reality environment ➢ Animate objects for realism. ➢ Use code blocks to add movement (with grouping) and interactions (conditions). ➢ Create multiple scenes of VR environments	Co-spaces website	▪
	Web Design	➢ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals.	➢ Create a static homepage. ➢ Choose a suitable theme for your website. ➢ Change the site identity to a suitable title, tagline and website icon. ➢ Upload a suitable header and/or background image.	Edublogs	▪ Wordpress ▪ Static page ▪ Theme ▪ Header ▪ Sidebar ▪ Widgets ▪ Navigation ▪ Domain name

			➢ Adjust the website sidebar and add suitable widgets. ➢ Add text and images to a page and edit them. ➢ Add multiple pages and edit the navigation, including sub-menus. ➢ Provide constructive feedback for your classmates' websites.		
	Machine Learning and Artificial Intelligence	➢ Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. ➢	➢ Understand how computers use information to learn by solving new problems and following new instructions. ➢ Understand and use examples of machine learning. ➢ Understand how artificial intelligence is used to perform tasks often only performed by humans. ➢ Discuss and show awareness of potential dangers of AI.	Cartoonify Quick, Draw Semantris Word Association AI Piano Duet	