St James and St John Church of England Primary School – Computing skills progression

iLearn2 Primary Computing

Key Stage Two

	Year 3	Year 4	Year 5	Year 6
Information Technology	NC: *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** 1. Add, resize and organise colour or picture backgrounds. 2. Add, resize, organise characters/objects to different panels. 3. Add narration using text and direct speech using speech bubbles. 4. Save comic with name and title. 5. Add audio recordings (optional). **Story Boards** 1. Add and edit backgrounds. 2. Add and edit characters, including changing posture, expression and clothing. 3. Add narration and speech bubbles, including formatting text. 4. Duplicate objects to match scenes. 5. Search for objects to use. **Digital Art** 1. Use various lines and fill tools plus copy/paste and rotation to create pattern effects. 2. Use shapes, fill, copy/paste, zoom and flip to create reflective symmetry effects. 3. Use stamps, copy/paste, layers and multiple frames to create animated GIF computer game graphics. **Music Creation** 1. Create ascending and descending scales. 2. Add chords evenly across the scales. 3. Add arpeggios and melodies. 4. Add a steady and even rhythm. 5. Use sampled sounds to create an effective mix. 6. Build beats, melody (tones) and effects.	NC: *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.* **Graphic Design** 1. Create an icon using different shapes and fill tools. 2. Combine shapes and lines, then arrange them in front/behind each other. 3. Combine shapes, colour and text to re-create an icon. 4. Change the colour, size and style of text to match an icon, then arrange images and use masking and opacity tools. **Animation** 1.Create a stop-motion video by duplicating slides that include backgrounds and shapes. 2. Create animation using transition and animation effects (morph, motion paths, pulse etc), including taking and editing a screenshot. 3. Animate individual elements of objects. 4. Create animated GIF files by animating pixels. **3D Design** <u>3D Village Pupil Activity Pack skills:</u> 1. Understand 3D spacial awareness. 2. Add 3D shapes, resize, adjust height, duplicate and use the different perspective. 3. Re-create different types of buildings using 3D shapes. 4. Create roads/paths by adjusting the height of 3D shapes. 5. Add windows and door shapes. <u>Lego Modelling Pupil Activity Pack skills:</u> 1. Add, move, change colour and duplicate a brick. 2. Rotate bricks. 3. Use sloping bricks and special bricks for a purpose. 4. Change the transparency of bricks. NC: *Collecting, analysing, evaluating and presenting data and information.* **Data Handling** 1. Change appearance of cells in a spreadsheet (fill colour and border) then add and align text. 2. Find and add data to a spreadsheet, resize cells and use the software to create a suitable chart with a title.	NC: *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.* **App Design** 1. Adjust slide size to mimic a phone/tablet size. 2. Add text and images *(including transparent images)* to a slide. 3. Add icons and text to use as navigation. 4. Duplicate slides to create multiple pages of the app. 5. Create hyperlinks to create navigation. **Ebook Creation** 1. Add page colour and style. 2. Add, position and format text on different pages. 3. Add and position images. 4. Add audio, including hiding it behind an object. 5. Add hyperlinks to text and images. 6. Search for shapes. 7. Lock and arrange shapes (extension task). NC: *Select, use and combine a variety of software (including internet services). Collecting, analysing, evaluating and presenting data and information.* **Data Handling** 1.Select and use non-adjacent cells plus resize multiple cell widths and copy/paste cells. 2.Use formulae to find totals, averages and maximum/minimum numbers. 3.Find data and create a spreadsheet to suit it. 4.Search a database for specific information.	NC: *Design and create digital content to accomplish goals.* **Graphic Design** 1. Add, adjust and fill shapes. 2. Group shapes to improve accuracy and speed. 3. Add and customise gradient effects. 4. Adjust transparency/opacity for a purpose. 5. Use a colour picker correctly. 6. Accurately rotate shapes. NC: *Design and create digital content to accomplish goals.* *Use search technologies effectively and be discerning in evaluating digital content.* **Computers: Past, Present and Future** 1. Show awareness of how computers and digital technology helps us today. 2. Understand how technology has changed over time and represent it as an interactive timeline. 3. Understand the impact (positive/negative) technological changes have on society. 4. Predict how technology will change in the future. NC: *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.* **Image Editing** 1. Adjust the colours, brightness and contrast to improve a photo. 2. Create a before and after slide in presentation software. 3. Take and crop a screenshot. 4. Add drawing and text layers. 5. Import new images as layers and resize them to fit. 6. Add colour elements to a black and white image using layers and eraser tools.

	Year 3	Year 4	Year 5	Year 6
Information Technology (continued)	NC: *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.* **Document Editing and Creation** 1. Copy and Paste text and images. 2. Find and replace words. 3. Format text for a purpose. 4. Add bullet points to make lists. 5. Experiment with keyboard shortcuts. **3D Design** 1. Understand and use 3D space on a grid. 2. Design cities/towns for a purpose and to a budget. 3. Re-create or design familiar 3D models using cubes, such as tables and chairs. 4. Use chisel tool to improve and adapt models. 5. Colour individual blocks or whole models. NC: *Design and create content that accomplish given goals.* **Infographics** 1. Understand what an infographic is and why we use them. 2. Search for and add suitable graphic elements. 3. Add and format suitable titles and text. 4. Label an image with arrows and text. NC: *Collect, classify and present data.* **Branching Database** 1. Add and label objects within a branching database. 2. Ask questions to sort (classify) objects	NC: *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.* **Video Editing** 1. Add scene images. 2. Add scripted voiceover audio, adjust the volume and crop clips (including splitting a clip). 3. Add more clips and use transition effects. 4. Add titles. 5. Use elements such as shapes. 6. Add music background music and adjust the volume. 7. Export a project. **Ebook Creation** 1. Choose a suitable page shape and add a title and subtitle. 2. Change the background colour/texture of a page. 3. Add, resize and change the colour of a shape then copy and paste it. 4. Search for and add suitable images then resize and position them. 5. Create another page with a background, image, shapes and text. 6. Add an audio recording of the page text, including hiding it behind an object. 7. Use hyperlinks for navigation between the pages.	*NC: 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.* **Music Creation** 1. Layer tracks using sounds and effects. 2. Create effective instrument tracks. 3. Edit tracks and effectively adjust volume and add effects. NC: *Select, use and combine a variety of software on a range of digital devices to create content that accomplish given goals.* **Operating Systems** 1. Understand the importance of an operating system and its key features. 2. Demonstrate important operating system skills (organising files etc), if possible, across multiple operating systems.	NC: *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.* **Web Design** 1. Create a static homepage. 2. Choose a suitable theme for your website. 3. Change the site identity to a suitable title, tagline and website icon. 4. Upload a suitable header and/or background image. 5. Adjust the website sidebar and add suitable widgets. 6. Add text and images to a page and edit them. 7. Add multiple pages and edit the navigation, including sub-menus. 8. Provide constructive feedback for your classmates' websites. NC: *Select, use and combine a variety of software (including internet services). Collecting, analysing, evaluating and presenting data and information.* **Data Detectives** 1. Use comprehension skills to find clues that match the column headings of a spreadsheet. 2. Use spreadsheet tools (filters and conditional formatting) to find the specific data to match the clues.

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Computer Science	NC: *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.* **Programming in Scratch** 1. Design, write and debug programs that accomplish specific goals. (Including outputs) 2. Use repetition in programs. 3. Work with various forms of inputs; keyboard, mouse and touch screen. 4. Write programs to simulate physical systems. NC: D*esign, write and debug programs that accomplish specific goal, including simulating physical systems.* *Use sequence, selection, and repetition in programs; work with various forms of input.* **Programming in Kodu** 1. Create a 3D place using various design tools 2. Write a program to control a character using inputs 3. Write a program with conditions to create an if statement (If the character touches an object it will disappear) 4. Add a multi-player aspect 5. Write a program with variables (scoring system) 6. Program operators (equals) to achieve a score and win a game.	NC: *Design, write and debug programs that accomplish specific goals.* *Use sequence, selection, and repetition in programs; work 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.* **Programming in Scratch** 1. Program inputs with loops, selection and sensing for interactions. 2. Work with variables and various forms of input and output. 3. Debug programs that accomplish goals. (correcting errors) 4. Use selection, data variables and operators. 5. Program a virtual robot using Scratch blocks.	NC: *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.* **Programming in Scratch** 1. Program inputs for control, selection (conditions) and sensing for interaction and data variables for scoring and a game timer. 2. Program distance sensing and movement. 3. Program inputs, outputs, loops, selection (conditions), sensing and variables. 4. Program list variables that chooses randomly. **Programming with Sphero** 1. Understanding Bluetooth Technology as Input Device 2. Write programs for the Sphero using movement and repetition (loops). 3. Write a program to trace a maze/route with Sphero and De-bug. 4. Write a program with outputs. 5. Write a program with random variables NC: *Use sequence and repetition in programs; work with variables. Correct errors.* **Text-based Programming** 1. Change the variables of text-based commands. 2. Write text-based commands accurately and use fill effects, stamps and functions. 3. Write text-based commands to program digital art. 4. Write text commands/functions to program keyboard inputs in a game. (Not compatible with iPad/tablet unless using physical keyboard) 5. Programming a Logo turtle to move and use pen *(Activity 5, lesson 1 and 2)* 6. Use co-ordinates in with a Logo turtle. 7. Print labels in Logo. 8. Program a loop (repetition) and shapes in Logo Turtle. 9. Program colours in Logo turtle. 10. Program variables in Logo turtle.	NC: *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.* **Programming in Scratch** 1. Program keyboard/touch screen inputs, selection (conditions), loops and random variables for unpredictability (operators). 2. Program inputs, selection, sensing, random variables, operators for direction and data variables for scoring. 3. Use inputs, selection, loops, sensing, costume changes and broadcasts. 4. Work with multiple sprites to send broadcast messages between them. NC: *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 Code** 1. Understand why computers/electronics use binary. 2. Match a sequence of binary code to create digital art. 3. To convert binary code to denary numbers (decimal numbers) and visa versa. *NC: 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.* *Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.* *Use a textual programming language to solve a variety of computational problems. (Key Stage 3*) **Python Programming** 1. Use the PRINT command for text. 2. Program a simple calculator in Python. 3. Program loops to repeat text. 4. Program interactive inputs. 5. Find errors in a program (debugging) 6. Program a trivia chatbot using 'send message' functions (challenge)

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Computer Science (continued)			*NC: 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.* **Physical Devices** 1. Understand that computers use physical inputs and outputs and give examples. 2. Program physical inputs, outputs (e.g program LED lights) and random variables. 3. Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems.	*NC: 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, presenting data and information. Use a textual programming language to solve a variety of computational problems. (Key Stage 3)* **HTML** 1. Add and align text and change colour. 2. Program background colour. 3. Add and align images. 4. Add hyperlinks to other websites. 5. Add an iframe (such as a Google Map) and adjust the height and width. NC: *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.* **Virtual Reality** 1. Understand what virtual reality is and how it can be used to help people. 2. Add, move and resize objects in a virtual reality environment. 3. Animate objects for realism. 4. Use code blocks to add movement (with grouping) and interactions (conditions). 5. Create multiple scenes of VR environments. **Machine Leaning and AI** 1. Understand how computers use information to learn by solving new problems and following new instructions. 2. Understand and use examples of machine learning. 3. Understand how artificial intelligence is used to perform tasks often only performed by humans. 4. Discuss and show awareness of potential dangers of AI.

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Digital Literacy	NC: *Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.* **E-Safety** 1.Understand what to do if something upsets you online. 2.Understand why and how people can be nasty online. 3.Describe the term 'sharing online' and why we need to get permission to share photos and videos of other people. 4. Understand why people pretend to be someone else online. 5.Understand why we only talk to people we know in the real world, when online. 6.Understand why we should not always trust what we read online and how to check 7.Understand the importance of being kind in the real world and also online. 8.Understand the importance of using avatars and how to make them.	NC: *Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.* **Internet Research** 1. Use search technologies to find specific pieces of information. 2. Understand features of an Internet Browser. 3. Reference the correct source of information. 4. Be discerning in evaluating digital content. 5. Check the internet for fake news by cross-referencing facts. NC: *Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.* **Inside a Computer** 1. Understand what important parts of inside a computer or mobile device do to help with the performance (CPU, Fan, Hard Drive, RAM, Graphics Card). 2. Understand that memory is measured in bytes and gigabytes. 3. Use search filters on websites to find suitable information. *NC: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.* **E-Safety** 1.Understand what to do if something upsets you online. 2.Understand why and how people can be nasty online. 3.Describe the term 'sharing online' and why we need to get permission to share photos and videos of other people. 4.Understand why people pretend to be someone else online. 5.Understand why we only talk to people we know in the real world, when online. 6.Understand why we should not always trust what we read online and how to check 7.Understand the importance of being kind in the real world and also online. 8.Understand the importance of using avatars and how to make them.	NC: *Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration.* **Computer Networks & the Internet** 1. Understand Computer Networks, Internet and Cloud Computing and how they help us. 2. What is email and how can we use it safely? 3. Understand how and why we collaborate online (including blogging). NC: *Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.* **E-Safety** 1. Keep personal information private. 2.Respect and protect again online bullies. 3. Understand the consequences of sharing photo/videos online. 4. Understand the term digital footprint. 5. How can we check online content is trustworthy. 6. How and where and who can we report concerns we have to. 7. Understand the pitfalls of in-app purchases.	NC: *Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.* **E-Safety** 1. Keep personal information private. 2.Respect and protect against online bullies. 3. Understand the consequences of sharing photo/videos online. 4. Understand the term digital footprint. 5. How can we check online content is trustworthy. 6. How, where and who can we report concerns we have to. 7. Use suitable usernames and passwords for online accounts. 8. Understand the pitfalls of in-app purchases.