



Biscovey Primary Academy

Computing – KS2 Progression of Knowledge and Skills

'Roots to grow, wings to fly'



	<u>Year 3</u>			<u>Year 4</u>		
Term	Autumn	Spring	Summer	Autumn	Spring	Summer
Computing overview	The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology.			The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology.		
Computer Science – algorithms, programming, networks and searches.	Use familiar computer hardware to successfully complete a task. (S) <i>using photographs to capture images, save in online folder and attach to an email.</i>	Use familiar computer hardware to successfully complete a task. (TT) <i>using photographs to capture images</i> Design, write and enter a sequence of instructions using a robot or other device to achieve specific outcomes, debugging if necessary. (P) <i>Move a programmable toy across a grid (fwd, bwd, Rt, Lt). Use repetition or loops in</i>		Recognise that the school network links computers to allow the sharing of resources. (RT) Collect information on a given location, create fields on collaboration spreadsheet (e.g. Google Sheets) and populate data (RT) <i>Awareness of copyright and keeping personal data safe.</i>		Use new and unfamiliar computing hardware. (T&R) <i>Take photographs and share images.</i>

		<i>program, predicting outcome and correcting mistakes</i> Explain that the World Wide Web contains lots of web pages about different subjects that can be searched. (P) Research, create poster including image, text and print. (P) Search and save images into online folder – Collaboration folder e.g. Google drive		Use digital technology in different ways in the classroom, home and community to achieve a set goal. (RT) Create written program of a tourist's route around location, include delays. Test program and identify errors – debug. (RT) Include looping element of physical systems (e.g. waiting for lift after button pressed) and repetition. (RT) Refining internet searches and identifying true or false facts from searches through cross checking. (RT) Create a program (online or handwritten for themselves) to follow an intended route, include directions,		
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				<i>delay and repeat commands.</i>		
Information Technology – word processing, databases, websites, animation, manipulating images and videos.	Combine a range of text, images, animation and audio and video clips for given purposes. (S) <i>Design a food label using ICT that would attract a buyer.</i> Combine a range of text, images, animation and audio and video clips for given purposes. (G&M) Use presentation software to demonstrate learning Insert video clip	Combine a range of text, images, animation and audio and video clips for given purposes. <i>(P) ICT Flow diagram, paper then 'Shapes' tool, Include arrows, colour, text, images. Print.</i> <i>(P) Import image, crop and resize image – image inserted into word document or video inserted into presentation</i> <i>(P) Create presentation, incorporate images from web / upload, insert speech bubbles</i>	Combine a range of text, images, animation and audio and video clips for given purposes. (MM) <i>Create and use a simple data table in spreadsheet software to record their findings - generate a simple bar chart</i> <i>(MM) Create presentation, incorporate images and transitions between slides.</i> Use a range of different software to successfully complete a project. (RR&R) Database creating software – create fields, input data. Discuss advantages of DB, how to filter and search information Use of online databases to record information e.g. doctors	Manipulate a range of text, images, sound or video clips and animation for given purposes. (RT) Use of online maps to create collaborative digital presentation. Cross check information. <i>(B,B&B) Download image and manipulate using tools in graphic package (e.g. Paint) to create a series of images based on the original.</i> <i>(B,B&B) Create video, write script and combine using video editing software (e.g. iMovie, MovieMaker)</i> Apply computing skills to use new computing software.	Manipulate a range of text, images, sound or video clips and animation for given purposes. <i>(BA) Use the web to download images to create a photo montage.</i> Apply computing skills to use new computing software. <i>(BA) Use programming language such as 'move', 'turn', 'repeat' and 'go to', to program an onscreen sprite. Create own sprite using drawing software. Include backgrounds, sounds and multiple sprites into program.</i> <i>(BA) Create promotional video including Title, credits, transitions, narration, sound effects and</i>	Manipulate a range of text, images, sound or video clips and animation for given purposes. <i>(T&R) Research and download images, audio files and video clips, import into presentation software. Include text.</i>

				(RT) ICT program (e.g. Scratch) to guide an onscreen sprite Use digital technology in different ways in the classroom, home and community to achieve a set goal (data collection). (RT) Create written program of a tourist's route around location, include delays. Test program and identify errors – debug.	music. Save as movie file. <i>Snip/split/trim and reorder parts of a supplied video clip and import in their own video presentation (ensure referenced author)</i> Use digital technology in different ways in the classroom, home and community to achieve a set goal (data collection). <i>(BA) examine real time GPS data of sea creature. Create multimedia presentation</i>	
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				(RT) Create a costing spreadsheet of a holiday. Accurate prices taken from the internet (RT) Sending email attachments (B,B&B) Create flow diagram (algorithm) showing clear and sequential steps		
Digital Literacy – using technology safely and responsibly. Legal and ethical responsibilities.	Show awareness that work they create and save on a computer or tablet can be shown to others using another device. <i>Recognise that saved work can be retrieved from another device on the same network (discuss WWW).</i> Use technology safely, respectfully and responsibly –	Recognise that information put online leaves a digital footprint and knowing who to ask if I am not sure if I should put something online. <i>Recognise that saved work can be retrieved from another device on the same network (discuss WWW).</i> Describe simple strategies for keeping passwords private.	Describe ways in which the media can shape ideas about gender. Explain what it means to know someone online and why this might be	Use digital technology in different ways in the classroom, home and community to achieve a set goal. (RT) Explain that when searching online, some web pages may contain adverts or pop-ups that encourage people to click on them. Some pop-ups can be malicious and lead to a virus, whereas some are helpful and give information. Refer to	Use digital technology in different ways in the classroom, home and community to achieve a set goal.	

	Feelings can be hurt by what is said or written online. Limiting amount of time using technology.	Understand the need for and why age restrictions are enforced. Describe ways in which the media can shape ideas about gender	different from knowing someone in real life.	software that blocks popups. Compose clear and appropriate messages in online communities. Identify appropriate behaviour when contributing to collaborative online projects for learning. Explain how the internet can be monitored. Describe ways technology can affect healthy sleep. Explain some of the issues.	Identify appropriate behaviour when contributing to collaborative online projects for learning by analysing information and differentiate between 'opinions', 'beliefs' and 'facts'. Recognise acceptable / unacceptable behaviour – explain why I need to think carefully about how content I post might affect others, their feelings and how it may affect how others feel about them (their reputation). Understand personal data and how others, including companies, use it online.	Understand and be able to set privacy settings on a device to control what is shared. Explain how many free apps or services may read and share private information with others. Describe how others can find out information about me by looking online.
Impact/key assessment criteria:	Through the above topics, knowledge and skills a Year 3 computer user will: - Design a sequence of instructions, including directional instructions - Write programs that accomplish a specific goal - Understand various forms of input and output - Use a range of software for similar purposes - Collect and present information - Design and create content - Search for information on the web in different ways - Manipulate and improve digital images			Through the above topics, knowledge and skills a Year 3 computer user will: - Experiment with variables to control models - Give an on-screen robot specific instructions that takes them from A to B - Make an accurate prediction and explain why they believe something will happen (linked to programming) - De-bug a program - Select and use software to accomplish given goals - Collect and present data		

	- Use technology respectfully and responsibly - Know different ways to get help when concerned - Understand what computer networks do and how they provide multiple services - Discern where it is best to use technology and where it adds little or no value - Recognise the difference between the work of others which has been copied - Follow the school's safer internet rules - Identify when emails should not be opened and when an attachment may not be safe - Demonstrate how to use email safely.			- Produce and upload a podcast - Recognise acceptable and unacceptable behaviour using technology - Recognise the difference between the work of others which has been copied and re-structuring and representing materials in ways which are unique and new. - Follow the school's safer internet rules - Identify when emails should not be opened and when an attachment may not be safe - Explain and demonstrate how to use email safely.		
	Year 5			Year 6		
Term	Autumn	Spring	Summer	Autumn	Spring	Summer
Computing overview	The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology.			The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology.		
Computer Science – algorithms, programming, networks and searches.	Design, write and debug simple sequences of instructions (algorithms), including IF, THEN and OTHERWISE commands, to decide if something is true or false. (S) Sequence a series of instructions to perform a task. Debug errors.		Design, write and debug simple sequences of instructions (algorithms), including IF, THEN and OTHERWISE commands, to decide if something is true or false. (SM) predict outcomes of simple algorithms. Create algorithm for a given task – debug other's programs.	Identify how using different hardware can increase creativity and productivity. (BH) taking and presenting photographs and videos to improve productivity and creativity		

	<i>Incorporate variables and various forms of input and output</i> (AI) Specific debugging task using Scratch. Download file, import, debug.		(SM) design a roller coaster using Scratch. Include loops, and simulate directional movement. Include emergency stop when sprite as input. Create an online collaborative project for a specific purpose, sharing documents and appropriately setting permissions for other group members. (web use) (SM) record website recommendations on collaboration document hosted on school network. Demonstrate how to create shared document with group members and setting permissions. (SM) create collaborative spreadsheet recording search data	Critically evaluate search engine results and identify factors that may affect ranking, such as how long the site has existed, the number of links to the site and whether the organisation has paid to have their site promoted. (BH) evaluate British Heart Foundation website. Create effectiveness rating with improvement suggestions.	Critically evaluate search engine results and identify factors that may affect ranking, such as how long the site has existed, the number of links to the site and whether the organisation has paid to have their site promoted. (DD) Discuss the validity of web searches. They do not consider whether content is true, age-appropriate, or relevant. Explore ways to minimise risks	Critically evaluate search engine results and identify factors that may affect ranking, such as how long the site has existed, the number of links to the site and whether the organisation has paid to have their site promoted. (HM) Use effective search terms to narrow down web searching (AND, OR)
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			Discern where web content might originate from and recognise that this gives clues to its authenticity, reliability and security. (SM) Refine web search using advanced techniques (plus, minus, AND, OR and AND NOT commands. (SM) Become web analyst – report on features on websites giving recommendations. Create class email to theme park recommending improvements to website.			
Information Technology – word processing, databases, websites, animation, manipulating images and videos.	Apply computing skills to create content using unfamiliar programs or apps (AI) Find and download copyright-free music and sounds- create soundtrack to reflect moods. Edit into single track (GarageBand/Audacity) (AI) Create digital image using layers in photo editing software.	Select, use and combine appropriate technology to create a solution that will have an impact on others. (P) online research to create a description text Create, select and combine a range of	Select, use and combine appropriate technology to create a solution that will have an impact on others. (SM) Show rollercoaster clips for VR experience. Use Green Screen to place children on real images and videos.	Select, use and combine a variety of software, including internet services, to meet a goal. (BH) <i>Create short video clip regarding specific goal and explore how to upload to the school website</i>	Select, use and combine a variety of software, including internet services, to meet a goal. (DD) Use photos, videos, websites, maps, digital mapping tools to investigate a location. (DD) Use morphing software to create simple animation and	Select, use and combine a variety of software, including internet services, to meet a goal. (ID) Create an avatar using suitable software package. Incorporate into backdrop with expressions, emotions, speech and thought bubbles. (ID) Take photos of locality and turn into photo story with

	Import onto background file. texts, images, sound clips and videos for given purposes. (BC) <i>Web research using video footage and images. Create presentation slide per object.</i> (BC) <i>Use Paint program to draw cartoon images. Emphasise most prominent features using editing tools. Include colour. Animate images.</i> (BC) <i>Use research skills to create food chain/web</i> (BC) <i>Create exciting presentation – include transitions and animations</i>	Create, select and combine a range of texts, images, sound clips and videos for given purposes. (SM) Create a map and key of theme park using images sourced from web, clip art, symbols, icons and text. Edit to include route around park (SM) <i>Analyse effects of different fonts, colours, images – record on collaboration document hosted on school network.</i> (SM) <i>Search and save inspiring images and videos to an online folder. Rename clips</i> (SM) <i>Create digital presentation including all skills learnt.</i> (SM) <i>Create digital poster including wordart. Make short audio or video to review the ride.</i> Apply computing skills to create content using	Combine a range of technology to achieve a particular outcome. (BH) <i>Create a hand written flow diagram including notes to explain each part. Reproduce using suitable software</i>	save finished clip (stop motion) (ACW) <i>Create animated presentation or podcast.</i> (ACW) <i>Web research to create digital timeline. Download and import images to timeline</i> Identify how a new piece of software or an app can increase creativity. (DD) <i>Edit and adapt planned morphing pictures. Make changes – evaluate</i>	transitions, animations and text. Create a collaborative document detailing how to improve locality. (ID) <i>Create digital 'Wanted' poster combining advanced layout features.</i> (HM) <i>Web research, Cut and Paste into document, divide own name into Maya syllables – explore online translation tools.</i> (HM) <i>Use web mapping technology (Google Earth) to compare different locations. Insert photographs into presentation. Include translation sound files. Change to non-linear presentation using hyperlinks between slides.</i>
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			unfamiliar programs or apps (SM) <i>Write a program, using Scratch, to mimic a drop ride.</i>			
Digital Literacy – using technology safely and responsibly. Legal and ethical responsibilities.	Assess and action different strategies to limit the impact of technology Understanding that privacy settings have limitations	Cite all sources when researching and explain why sources should be provided. Describe ways that information about people online can be used by others to make	Identify a range of ways to report concerns about content or contact (SM) investigate ways to report online content Identify appropriate behaviour when contributing to collaborative online projects for learning. Recognising techniques used for persuasion (SM)	Recognise that digital content can be edited online. Explain why lots of people sharing the same opinions or beliefs online does not make those opinions or beliefs true.	Name some of the positives and negatives of communicating with others online. (DD) Consider, research and discuss hypothetical questions based on a figure in history. Would today's technology (digital photography, GPS mapping, whole genome sequencing) made a significant impact and how? Explore the use of Virtual reality to aid understanding of a time in history Recognise that digital content can be edited online. Demonstrate strategies to enable me to analyse and evaluate the validity of 'facts' and explain why using these strategies are important.	Name some of the positives and negatives of communicating with others online. (Use of social media and the dangers it can pose.) (ID) Use a number of scenarios to spot signs of electronic communication may be from an imposter or stranger. Exploring freedom of speech and the role and responsibly of the media

	Copyright and plagiarism (AI) <i>Discuss taking text, images, sounds, videos, music from web may be theft. Introduce copyright free and Creative Commons licensed material</i>	judgments about an individual and how rash and impulsive communications online may cause problems.	<i>Produce poster that directly targets young audience.</i> Online fraud and password phishing	Online profiles and how much of the information seen online is a result of some form of targeting.	(ACW) Discuss how reliable online historical resources are. Reference websites Exploring freedom of speech and the role and responsibly of the media in informing and shaping public opinion	in informing and shaping public opinion Cyberbullying – How to support others (including those who are having difficulties) online. Identify a range of ways to report concerns both in school and at home about online bullying.
Impact/key assessment criteria:	Through the above topics, knowledge and skills a Year 5 computer user will: - Combine sequences of instructions and procedures to turn devices on and off - Use technology to control an external device - Design algorithms that use repetition and 2-way selection - Analyse information - Evaluate information - Understand how search results are selected and ranked - Be able to edit a film - Understand that you have to make choices when using technology and that not everything is true and/or safe - Follow the school's safer internet rules - Use technology in ways which minimises risk, e.g. responsible use of online discussions - Create strong passwords and manage them so they remain strong - Independently, and with regard for e-safety, select and use appropriate communication tools to solve problems by collaborating and communicating with others with and beyond school.			Through the above topics, knowledge and skills a Year 6 computer user will: - Design a solution by breaking a problem up and recognise that different solutions can exist for the same problem - Use logical reasoning to detect error in algorithms - Use selection and variables in programs - Explain how an algorithm works - Explore 'what if' questions by planning different scenarios for controlled devices - Select, use and combine software on a range of digital devices - Use a range of technology for a specific project - Discuss the risks on online technology and follow the school's safer internet rules - Use technology in ways which minimises risk, e.g. responsible use of online discussions - Create strong passwords and manage them so they remain strong - Independently, and with regard for e-safety, select and use appropriate communication tools to solve problems by collaborating and communicating with others with and beyond school. - Use appropriate strategies for finding, critically evaluating, validating and verifying information - Use knowledge of the meaning of different domain names and common website extensions (e.g. .co.uk; .com; .ac; .sch; .org; .gov; .net) to support validation of information.		