Amble Links First School: ICT/Computing Planning 2020-21. Long Term Plan

Through the delivery of computing we aim to ensure that the children are equipped with the ability to solve problems and become confident, competent and creative users of a range information and communication technology to create content and express their ideas. We prioritise giving them the appropriate basic ICT skills required to competently use common applications used in many workplaces, search the internet effectively and become safe and respectful users of online services. We place a strong emphasis on learning key subject and topic based vocabulary. To ensure breadth, our computing curriculum focuses on the key areas of: Understanding technology, creating content, programming and data handling.

Early teaching is focused on developing appropriate basic skills through both direct instruction and experimentation before applying these across a range of devices and applications. Children are offered a range of opportunities to use and develop their computing skills in other subjects, where appropriate.

Our computing curriculum programme is based on the National Centre for Computing Education's scheme of work.

	Year 1	Year 2	Year 3	Year 4
Autumn 1 **Understanding technology/ networks**	**Computing systems and networks** **Technology around us** Develop understanding of technology and how it can help us. Become familiar with the different components of a computer by developing their keyboard and mouse skills. Consider how to use technology responsibly. Key vocabulary: technology, computer, mouse, mousepad, keyboard, screen, click, drag, double click, input device, shift, spacebar.	**Computing systems and networks** **Information Technology around us** Look at information technology at school and beyond, in settings such as shops, hospitals, and libraries. Investigate how information technology improves our world, and learn about using information technology responsibly. Key vocabulary: information technology, barcode, scanner/scan	**Connecting Computers** Develop understanding of digital devices, with an initial focus on inputs, processes, and outputs. Compare digital and non-digital devices. Introduce computer networks, including devices that make up a network's infrastructure, such as wireless access points and switches. Discovering the benefits of connecting devices in a network. Key Vocabulary: digital device, input, output, process, program, connection, network, network switch, server, wireless access point.	**The Internet** Apply knowledge and understanding of networks, to appreciate the internet as a network of networks which need to be kept secure. Know that the World Wide Web is part of the internet, and explore the World Wide Web to learn about who owns content and what can be accessed, added, and created. Evaluate online content to decide how honest, accurate, or reliable it is, and understand the consequences of false information. Key vocabulary: internet, network, router, network security, server, switch, website, webpage, web address, browser, routing, links, files, content, sharing, ownership, permission, accurate, honest, adverts.
Autumn 2 **Creating Content**	**Digital Painting** Develop understanding of a range of tools used for digital painting. Use these tools to create digital paintings, while gaining inspiration from a range of artists' work. Consider preferences when painting with and without the use of digital devices. Key vocabulary: tool, paintbrush, erase, fill, undo, shape tool, line tool, brush style, brush size.	**Digital Photography** Recognise that different devices can be used to capture photographs. Gain experience capturing, editing, and improving photos and use this knowledge to recognise that images they see may not be real. Key vocabulary: device, camera, capture, image, digital, landscape, portrait, horizontal, vertical, narrow, wide, format, framing, focal point, compose, flash, focus, background, foreground, edit, filter.	**Stop Frame Animation** Use a range of techniques to create a stop-frame animation using tablets. Apply those skills to create a story-based animation. Adding other types of media to animations, such as music and text. Key vocabulary: animation, flipbook, stop frame animation, frame, sequence, image, photograph, setting, events, onion skinning, consistency, delete, media, import, transition.	**Audio Editing** Examine devices capable of recording digital audio, including identifying the input device (microphone) and output devices (speaker or headphones). Discuss the ownership of digital audio and the copyright implications of duplicating the work of others. Use Audacity to produce a podcast, which will include editing their work, adding multiple tracks, and opening and saving the audio files. Key vocabulary: audio, record, playback, microphone, speaker, headphones, input, output, pause, podcast, save, file, mixing, export, MP3.

Spring 1 **Programming**	**Moving a Robot** Introduction to early programming concepts. Explore using individual commands, with others and as part of a computer program. Identify what each floor robot command does and use that knowledge to start predicting the outcome of programs. Introduces the early stages of program design through the introduction of algorithms. Key vocabulary: forwards, backwards, turn, clear, go, commands, instructions, directions, left, right, plan, algorithm, program.	**Robot Algorithms** Developing understanding of instructions in sequences and the use of logical reasoning to predict outcomes. Use given commands in different orders to investigate how the order affects the outcome. Consider design in programming and develop artwork and test it for use in a program. Design and test algorithms as programs and debug. Key vocabulary: instruction, sequence, unambiguous, algorithm, program, order, commands, prediction, route, design, debug.	**Programming – Sequencing Sounds** Explore the concept of sequencing in programming through Scratch. Introduction to the programming environment. Introduction to a selection of motion, sound, and event blocks to create programs, featuring sequences. Make a representation of a piano. Focus on all aspects of sequences. Apply stages of program design. Key vocabulary: programming, blocks, command, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, sequence, event, algorithm, bug, debug.	**Programming – Repetition in shapes** Introducing repetition and loops within programming. Create programs by planning, modifying, and testing commands to create shapes and patterns using Logo, a text-based programming language. Key vocabulary: program, turtle, command, code snippet, algorithm, design, debug, logo, pattern, repeat, count-controlled loop, value, trace, decompose, procedure.
Spring 2 **Data Handling**	**Grouping Data** Introduction to data and information: labelling, grouping, and searching. Assigning data (images) with different labels in order to demonstrate how computers are able to group and present data. Use labels to put objects into groups, and labelling these groups. Demonstrate ability to sort objects into different groups, based on properties selected. Sort objects into different groups to answer questions about data. Key vocabulary: object, label, group, search image, property, value, data set.	**Pictograms** Introduces the learners to the term 'data'. Understand what data means and how this can be collected in the form of a tally chart. Understand the term 'attribute' and use this to organise data. Presenting data in the form of pictograms and block diagrams. Use data presented to answer questions. Key vocabulary: organise, data, object, tally, chart, pictogram, enter, count, attribute, block diagram.	**Branching Databases** Understanding what a branching database is and how to create one. Knowing what attributes are and how to use them to sort groups of objects by using yes/no questions. Create physical and on-screen branching databases. Evaluate the effectiveness of branching databases and decide what types of data should be presented as a branching database. Key vocabulary: attribute, value, table, objects, database, branching database, separate, structure, organise, select, decision tree.	**Data Logging** Understand how and why data is collected over time. Consider the senses that humans use to experience the environment and how computers use input devices called sensors to monitor the environment. Collect data as well as access data captured over long periods of time. Study data points, data sets, and logging intervals. Use a computer to review and analyse data. Ask questions and use data loggers to automatically collect the data needed to answer those questions. Key vocabulary: data, table, input device, sensor, data logger, logging, data point, interval, analyse, dataset, import, export, conclusion.

Summer 1 **Creating Content**	**Digital Writing** Develop understanding of the various aspects of using a computer to create and manipulate text. Become familiar with using a keyboard and mouse to enter and remove text. Learn how to change the look of text and justify reasoning for changes. Understand the differences between using a computer to create text, and writing text on paper. Key vocabulary: word processor, keyboard, keys, backspace, cursor, toolbar, bold, italic, underline, select, font, undo.	**Making Music** Use a computer to create music. Listen to a variety of pieces of music and consider how music can make an audience think and feel. Compare creating music digitally and non-digitally. Study at patterns and purposefully create music. Key vocabulary: pattern, rhythm, pulse, pitch, tempo, notes, instrument, beat, open, edit.	**Desktop Publishing** Understand the terms 'text' and 'images' and that they can be used to communicate messages. Use desktop publishing software and consider careful choices of font size, colour and type to edit and improve premade documents. Understand the terms 'templates', 'orientation', and 'placeholders'. Add text and images to create work using desktop publishing software. Consider a range of page layouts thinking carefully about the purpose of these and evaluate how and why desktop publishing is used in the real world. Key vocabulary: desktop publishing, text, images, font style, template, landscape, portrait, orientation, placeholder, copy, paste, layout, purpose.	**Photo Editing** Develop understanding of how digital images can be changed and edited, and how they can then be resaved and reused. Consider the impact that editing images can have, and evaluate the effectiveness of choices. Key vocabulary: image, arrange, select, digital, crop, undo, save, search, copyright, pixels, rotate, crop, flip, hue/saturation, sepia, vignette, retouch, recolour, clone, magic wand, adjust, sharpen, brighten, fake, alter, background, foreground, original, elements, layer, border.
Summer 2 **Programming**	**Programming Animations** Introduce on-screen programming through ScratchJr. Explore the way a project looks by investigating sprites and backgrounds. Use programming blocks to use, modify, and create programs. Introduction to the early stages of program design through the introduction of algorithms. Key vocabulary: command, sprite, compare, program, programming area, programming block, start block, run, background, reset, algorithm, predict, effect, value, delete.	**Programming Quizzes** Understand that sequences of commands have an outcome, and make predictions. Use and modify designs to create quiz questions realise designs in ScratchJr using blocks of code. Evaluate work and make improvements to programming projects. Key vocabulary: sequence, command, program, run, start, outcome, predict, blocks, sprite, design, actions, project, modify, change, build, match, debug, features.	**Programming – Events and Actions in Programs** Explores links between events and actions, and consolidate understanding of sequencing. Move a sprite in four directions (up, down, left, and right). Explore movement within the context of a maze, using design to choose an appropriately sized sprite. Introduce programming extensions, through the use of **Pen** blocks. Draw lines with sprites and change the size and colour of lines. Designing and code a maze-tracing program. Key vocabulary: motion, event, sprite, algorithm, logic, move, resize, extension block, pen up, set up, action, error, debug, code.	**Repetition in Games** Deepen understanding of repetition in programming using the Scratch environment. Understand the difference between count-controlled and infinite loops. Modify existing animations and games using repetition. Design and create a game which uses repetition, applying stages of programming design throughout. Key vocabulary: programming, algorithm, sprite, block, code, loop, repeat, value, forever, infinite loop, count controlled loop, costume, repetition, event block, duplicate, modify, debug, refine.

Online Safety – Long Term Plan

Throughout our computing curriculum, every opportunity is taken to discuss and teach the children how to stay safe online. Within each half termly unit, one session is dedicated to the discrete teaching of online safety. This is based on the Twinkl Online Safety scheme of work which is closely linked to the Common Sense Media's Digital Citizenship Curriculum which **addresses critical issues facing children in a fast-changing world of media and technology. The innovative lessons teach students to think critically and develop the habits of mind to navigate digital dilemmas in their everyday lives.**

	Year 1	Year 2	Year 3	Year 4
Autumn 1	Online Safety Usernames and Passwords. Owning Your Creative Work**.**	Online Safety: Digital Footprints –	Online Safety: What is Cyberbullying?	Online Safety: Cyberbullying
Autumn 2	Online Safety: Safe Image Searching	Online Safety: Keywords	Online Safety: To buy or not to buy?	Online Safety: Super Searchers
Spring 1	Online Safety: Staying SMART Online	Online Safety: You be the judge –	Online Safety: Keep it to yourself	Online Safety: Copycats!
Spring 2	Online Safety: My Personal Information	Online Safety: Rate and Review	Online Safety: Emailing	Online Safety: Too much information
Summer 1	Online Safety: What is Email?	Online Safety: Being Kind Online –	Online Safety: Online Communication	Online Safety: The Online Community Exploring Sounds
Summer 2	Online Safety: Keeping Zibb Safe Online	Online Safety: Cyber Snakes and Ladders	Online Safety: Party Planners	Online Safety: Cyber Superheroes –

Online Safety Curriculum Progression

National Curriculum Statement	Year 1	Year 2	Year 3	Year 4
KS1: 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 **KS2**: use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	By the end of the year children will be able to: • type their name and the date on a piece of work they have created; • choose the correct Safe Search filter when using a search engine; • make links between the online and offline world; • recall all of the SMART rules for Internet safety; • recognise which personal information they should keep safe from strangers; • help to construct an email.	By the end of the year children will be able to: • explain what 'digital footprint' means; • know how people can use the information they put online; • know that a digital footprint contains information about a person; • know how to use keywords to give better search results; • use a website to search for information; • identify possible dangers online; • explain how to identify websites suitable for their age; • know when and how to ask an adult for advice about accessing a website; • explain what to do if a website makes them uncomfortable; • know what people might want to know about a website in order to determine its usefulness; • explain their likes and dislikes about a website; • identify who a website could be aimed at; • identify unkind online behaviour; • know the course of action to take if they think someone is being unkind to them online; • safely search for information online; • choose appropriate websites for their age.	By the end of the year children will be able to: • recognise and define cyberbullying; • identify safe people to report cyberbullying to; • know how cyberbullying can happen via a range of devices; • identify a range of targeted online adverts; • explain how companies use websites to promote products; • create a strong password, explaining why it is important; • explain what privacy settings are and how to use them safely; • discuss the benefits and disadvantages of email as a form of communication; • identify an email that may be unsafe to open, explaining why; • write a clear email, explaining why an address and subject is important; • know how to safely send and receive emails; • explain what an online community is, giving examples of ones they are a part of; • identify and explain different forms of online communication; • explain the positive and negative aspects of online communities; • explain the differences between communication in real life and online;	By the end of the year children will be able to: • identify comments or messages that may be hurtful to others; • edit their own messages and comments to make sure they are kind; • understand that search results are ranked; • choose an appropriate number of words for a search term; • explain how to use other people's work respectfully; • explain why it may be dangerous to share private information; • explain how to be a good digital citizen;