Year 2 Long Term Plan

Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Computing systems and networks 1 What is a computer?	***Programming 1*** Algorithms and debugging	**Computing systems and networks 2** Word processing	**Programming 2** ScratchJr	**Creating media** Stop Motion	**Data Handling** International Space Station

Senacre Wood Primary School

Year 2 Medium Term Plan

Term 1 Computing – Computer Systems and Networks What is a computer?			
National Curriculum Links	**Disciplinary Knowledge – Key Skills**	**Substantive Knowledge – Key Knowledge**	**Key Vocabulary**
• recognise common uses of information technology beyond school • use technology purposefully to create, organise, store, manipulate and retrieve digital content • Use logical reasoning to predict the behaviour of simple programs • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	• **Understanding what a computer is and that it is made up of different components.** • Recognising that buttons cause effects and that technology follows instructions. • Learning how we know that technology is doing what we want it to do via its output. • Using greater control when taking photos with cameras, tablets or computers. • **Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts.** • **Using word processing software to type and reformat text.** • Creating and labelling images. • Learning how computers are used in the wider world	• The difference between a desktop and a laptop computer. • People control technology. • **Some input devices that give a computer an instruction about what to do (output).** • Computers often work together.	Battery, Camera, Desktop, Digital, Electricity, Input, Keyboard, monitor, output, scanner, system, technology, buttons, computer, device, digital recorder, function, invention, laptop, mouse, paying till, screen, tablet, video, wires Offline, online, information, private, safe, trusted adult

Term 1	Lesson 1 E-safety	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6
Lesson Overview including Substantive knowledge	What happens why I post online? Learn how information put online about someone can last for a long time and finding out about who to talk to if something has been put online without consent or if it is incorrect	Computer parts **Year 1 Retrieval** **Explain the purpose of the mouse.** Learning to name the different parts of a computer before creating a digital drawing of a laptop and discussing the purpose of each part.	Inputs Learning how technology is controlled by designing a robot for a specific purpose, focussing on which forms of input it requires	Technology Safari Learning further about what a computer is and conducting a tour of the school. Identifying and photographing different examples of technology	Invention Designing a new invention with inputs and outputs and explaining how it works and is controlled	Real world roleplay Exploring and understanding the different types of computers that are used in the real world and the roles they play
Organisation and Communication	Scenario car photos	Labelled drawing	Robot sheets, labelling inputs and outputs	Seesaw photographs	Invention sheets Written explanation of invention	Seesaw videos of role play
Reading & Maths Opportunities						

Term 2 Computing – Programming Algorithms and debugging			
National Curriculum Links	**Disciplinary Knowledge – Key Skills**	**Substantive Knowledge – Key Knowledge**	**Key Vocabulary**
• 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 • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	• Developing confidence with the keyboard and the basics of touch typing. • **Articulating what decomposition is.** • Decomposing a game to predict the algorithms used to create it. • **Learning that there are different levels of abstraction**. • **Explaining what an algorithm is.** • Following an algorithm. • Creating a clear and precise algorithm. • Learning that programs execute by following precise instructions. • Using logical thinking to explore software, predicting, testing and explaining what it does. • Using an algorithm to write a basic computer program. • Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts.	• To understand what machine learning is and how it enables computers to make predictions. • To know that loops in programming are where you set a certain instruction (or instructions) to be repeated multiple times. • **To know that abstraction is the removing of unnecessary detail to help solve a problem.**	Abstraction, clear, data, decompose, key features, predict, algorithm, bug, correct, debug, error, unnecessary Online, offline, online information, private, safe, trusted adult

Term 2	Lesson 1 Esafety	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6
Lesson Overview including Substantive knowledge	How do I keep my things safe online? Learning how passwords can be used to protect information accounts and devices; giving examples of what is meant by 'private' and 'keeping things private'; explaining some rules for keeping personal information private (e.g. creating and protecting passwords)	***Dinosaur algorithm*** **Year 1 Retrieval** **What is an algorithm?** **What is debugging?** Following instructions carefully whilst playing an unplugged version of a dinosaur-themed game	***Machine learning*** Learning computers can use algorithms to make informed and calculated predictions and helping teach a computer program how to interpret different drawings	***Through the maze*** Building on an understanding of algorithms, explore activities on a programming piece of software: Google- coding for carrots, directing a rabbit through a maze	***Making maps*** Develop an understanding of the idea of 'abstraction' by creating a simplified map and view of part of the school	***Unplugged debugging*** **Retrieval- Speak like an expert** **Explain the terms algorithm, debugging and abstraction.** Using their knowledge of debugging, robots are physically constructed via an unplugged algorithms activity
Organisation and Communication	Sorting private and personal cards photos	Seesaw pictures of actions	Written instructions Video of some children following instructions	Seesaw screenshots	Collaborative map	Video of building following programmer's instructions – some children
Reading & Maths Opportunities		Describing position and movement	Describing position and movement	Describing position and movement	Describing position and movement	Describing position and movement

Term 3 Computing – Computer Systems and Networks Word processing			
National Curriculum Links	**Disciplinary Knowledge – Key Skills**	**Substantive Knowledge – Key Knowledge**	**Key Vocabulary**
• Use technology purposefully to create, organise, store, manipulate and retrieve digital content. • Use technology safely and respectfully, keeping personal information private. • Recognise common uses of information technology beyond school • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	• **Developing confidence with the keyboard and the basics of touch typing.** • **Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts.** • Using word processing software to type and reformat text. • Searching for appropriate images to use in a document. • Understanding what online information is. • **Identifying whether information is safe or unsafe to be shared online.**	• To know that touch typing is the fastest way to type. • **To know that I can make text a different style, size and colour.** • **To know that "copy and paste" is a quick way of duplicating text.**	Backspace, copy, cut, forward button, home row, image, italics, keyboard character, keyword, navigate, bold, delete, highlight, home screen, import, keyboard, keyboard shortcut, layout, paste, redo, space bar, text effects, underline, search, text, touch typing, undo Content, permission, share

Term 3	Lesson 1 Esafety	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6
Lesson Overview including Substantive knowledge	Who should I ask? Children learn that they should speak to a responsible adult before sharing things about themselves or others online and must always get permission from others before sharing something about them online	***Getting to know the keyboard*** **EYFS Retrieval** **What do we know about a keyboard?** Learning about the setup and layout of a keyboard and exploring the basics of touch typing	***Getting started with word processing*** Leaning how to store information in a text document and how to carry out keyboard shortcuts	***Newspaper writer*** **Year 1 Retrieval** **How do we search for an image online?** Exploring editing and formatting images in a text document within the context of newspaper writing	***Poetry book*** Searching the internet to find text that can be copied and pasted into a poetry book and understanding the importance of referencing copied work	***Digital writer*** **End of Unit Retrieval** Showcasing all skills learning throughout the unit to create a piece of writing including images and other features
Organisation and Communication	Videos of scenario acting	Seesaw videos of typing speeds – some children	Seesaw videos of shortcut use – some children	Seesaw screenshots	Seesaw screenshots	Seesaw screenshots
Reading & Maths Opportunities			Recalling the story of a familiar story			Writing cross curricular links

Term 4 Computing – Programming Scratch Jr			
National Curriculum Links	**Disciplinary Knowledge – Key Skills**	**Substantive Knowledge – Key Knowledge**	**Key Vocabulary**
• 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 • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	• **Recognising that buttons cause effects and that technology follows instruction** • Explaining what an algorithm is. • Following an algorithm. • **Creating a clear and precise algorithm.** • Learning that programs execute by following precise instructions. • Incorporating loops within algorithms. • Using logical thinking to explore software, predicting, testing and explaining what it does. • **Using an algorithm to write a basic computer program.** • Using loop blocks when programming to repeat an instruction more than once. • Using software (and unplugged means) to create story animations.	• To know that coding is writing in a special language so that the computer understands what to do. • **To understand that the character in ScratchJr is controlled by the programming blocks.** • To know that you can write a program to create a musical instrument or tell a joke.	Algorithm , blocks, button, computer code, debug, icon, instructions, on tap, repeat, sequence, animation, bug, cgi, code, fluid, imitate, loop, programming, scratchjr, sound recording Permission, denying permission, pressure, trusted adult, accepting, private information, content

Term 4	Lesson 1 Esafety	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6
Lesson Overview including Substantive knowledge	It's my choice Pupils learn that we have the right to say 'no' or 'I will have to ask someone' if someone wants to share something about us online, and that they must always ask a trusted adult before clicking 'yes', 'agree' or 'accept' online	***Using ScratchJr*** Tinkering with ScratchJr independently; building a program by dragging 'blocks' then running the code; learning that each block has a different attribute; predicting, exploring and explaining throughout.	***Creating an animation*** Using the blue 'movement' blocks, working collectively to realistically mimic the movement of a fly, learning that giving the computer two instructions makes for a more natural movement before moving on to programming animals	***Making a musical instrument*** Using the green 'sound' blocks to create a musical instrument, selecting the microphone option to record sounds and design an instrument outline and the buttons to make it play	***Programming a joke*** Following an algorithm to program a joke by designing a background, adding one or two relevant characters and using the green sound blocks to record voices.	***The Three Little Pigs algorithms*** **End of Unit Retrieval** Pupils will be using a mixture of blocks to program the story: 'The three Little Pigs'
Organisation and Communication	Videos of scenario acting	Seesaw screenshots	Seesaw screenshots	Seesaw screenshots	Seesaw screenshots	Seesaw screenshots
Reading & Maths Opportunities		Recalling the Three Little Pigs story Describing position and movement	Describing position and movement	Describing position and movement	Describing position and movement	Describing position and movement

Term 5 Computing – Creating Media Stop Motion			
National Curriculum Links	**Disciplinary Knowledge – Key Skills**	**Substantive Knowledge – Key Knowledge**	**Key Vocabulary**
• Use technology purposefully to create, organise, store, manipulate and retrieve digital content • Recognise common uses of information technology beyond school • Use technology safely and respectfully, keeping personal information private • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	• **Using greater control when taking photos with cameras, tablets or computers.** • Using logical thinking to explore software, predicting, testing and explaining what it does.	• **To understand that an animation is made up of a sequence of photographs.** • **To know that small changes in my frames will create a smoother looking animation.** • To understand what software creates simple animations and some of its features e.g. onion skinning.	Animation, decompose, drawing, frames, object, plan, background, digital device, flipbook, moving images, onion skinning, still images Reliable, edit, images, pup ups

Term 5	Lesson 1 Esafety	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6
Lesson Overview including Substantive knowledge	Is it true? Learning that not everything we read, see or hear online are ture and learning strategies that can be adopted to check if something online is true or not	What is animation? Explore what is meant by the word animation to then design and create a simple animation with the use of a flip book template	What is stop motion? **Year 1 Retrieval** Recap key skills for taking photographs Explore what is meant by the term stop motion animation and create a space themed animation using stop motion piece of software	***My first animation*** Using knowledge of the stop motion process, create a space themed stop motion animation, using print out background and object templates	***Planning my project*** Using a variety of different backgrounds and objects, plan a space themed animation discussing on the stop motion skills acquired so far	***Creating my project*** **End of Unit Retrieval** Work in pairs to produce a spear themed stop motion animation with Partner A in charge of filming the animation and Partner B in charge of moving the objects in the frame
Organisation and Communication	• True or false sheets	flipbooks	Videos of animations – some children Seesaw screenshots	Seesaw screenshots	Planning sheets	Videos of animations – some children Evaluation sheets
Reading & Maths Opportunities						

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Term 6 Computing – Data Handling – International Space Station			
National Curriculum Links	**Disciplinary Knowledge – Key Skills**	**Substantive Knowledge – Key Knowledge**	**Key Vocabulary**
• Use technology purposefully to create, organise, store, manipulate and retrieve digital content	• **Developing confidence with the keyboard and the basics of touch typing.** • Creating and labelling images. • **Collecting and inputting data into a spreadsheet.** • Interpreting data from a spreadsheet. • Learning how computers are used in the wider world.	• **Simple data can be entered into a spreadsheet.** • What steps are needed to take to create an algorithm. • What data to use to answer certain questions. • Computers can be used to monitor supplies.	Algorithm, data, digital content, galaxy, interactive map, international space station, laboratory, planter, sensor, temperature, astronaut, digital, experiment, insulation, international space centre, interpret, monitor, satellite, space, thermometer, water reservoir

Term 6	Lesson 1 Esafety	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6
Lesson Overview including Substantive knowledge	Revision Create posters for e-safety showing a section for each segment covered this year	***Homes in space*** Learn that the ISS is a 'home' in space for astronauts who travel there and that computers are used to collect data to make sure that human needs are met on the ISS	***Space bag*** Develop mouse and keyboard skills by creating digital drawings of basic items that astronauts would need in space, learning about the basic survival needs of humans	***Warmer, colder*** Learning that sensor monitors are used on board the ISS to collect data and ensure the astronauts are safe and healthy, discover how to read thermometers and design a display to show data	***Experiments in space*** **Prior Unit Retrieval** (Programming) Recap knowledge about algorithms and block coding. Learn what plants need to grow that will help create an algorithm for growing a plant in space, including the use of sensors to collect vital data	***Goldilocks planets*** Using an understanding of what is required to support human life by exploring a range of both real and fictitious planets, interpreting data to decide whether they might be habitable
Organisation and Communication	• Posters	Explorer sheets and maps	Seesaw screenshots	Seesaw screenshots	Written or drawn algorithms	Fact files
Reading & Maths Opportunities				Reading temperatures on a numbered thermometer		

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