Year 1 Computing Long Term Plan

Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Programming 1 – algorithms **Online safety** – using the internet safely	**Programming 2** – Bee-Bot **Online safety** – online emotions	**Computing systems and networks** – Improving Mouse Skills **Online safety** – always be kind and considerate	**Creating media** – digital imagery **Online safety** – posting and sharing online	**Data handling** – introduction to data **Online safety** – how much time should we spend on technology	Skills showcase – rocket to the moon

Sencaster Wood Primary School

Ongoing Big Question – Online safety			
National Curriculum Links	**Disciplinary Knowledge – Key Skills**	**Substantive Knowledge – Key Knowledge**	**Key Vocabulary**
• 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. • recognise common uses of information technology beyond school	• Recognising devices that are connected to the internet. • Understanding that we are connected to others when using the internet. • Understanding some of the ways we can use the internet. • **When using the internet to search for images, learning what to do if they come across something online that worries them or makes them feel uncomfortable.** • Understanding how to interact safely with others online. • Recognising how actions on the internet can affect others. • Recognising what a digital footprint is and how to be careful about posting online. • Discussing ways to balance time spent online and offline.	• To know that the internet is many devices connected to one another. • **To know what to do if you feel unsafe or worried online – tell a trusted adult.** • To know that people you do not know on the internet (online) are strangers and are not always who they say they are. • **To know that to stay safe online it is important to keep personal information safe.** • To know that 'sharing' online means giving something specific to someone else via the internet and 'posting' online means placing information on the internet.	App, appropriate, device, digital footprint, feelings, going online, in-person interactions, internet, kindness, offline activity, online activity, online experience, online interactions, online safety, personal information, pop-up, posting online, report, responsible digital citizen, screen time, sharing online, stranger, technology, trusted adult, unkind, website

Ongoing	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Lesson Overview including Substantive knowledge	***To recognise what the internet is and how to use it safely.*** Chn will discuss what they think the internet is before watching the BBC clip: https://www.bbc.co.uk/bitesize/topics/z3tbwmn/articles/zqwnsbk *We will talk about which devices use the internet and what we might use the internet for.* *Children will then meet Zork the alien and help him to make the right decisions about being safe online.*	***To identify how people's feelings and emotions can be affected by online content.*** **Retrieval 1: What do you remember about keeping Zork safe online?** Children will watch the online safety rap to remind themselves of the key points to remember about staying safe online. **Retrieval 2: Children to draw all the devices they know that connect to the internet.** Children will meet Bella the dog and help her to stay safe online by reading scenarios and discussing solutions as a class	***To recognise how to treat others, both online and in person.*** **Retrieval: Speak like an expert. Children to work in pairs to tell their partner the key things to remember to stay safe online** Children will watch the online safety rap to remind themselves of the key points to remember about staying safe online. We will answer the question '*what is the difference between the real world and the online world?*' We will discuss different emotions and what they might look like before acting out real world interactions and discussing how they make us feel. This will then be repeated with online interactions	***To recognise the importance of being careful when posting and sharing online.*** **Retrieval: TTYP everything you can remember about being safe online with a focus on being kind.** Children will watch the online safety rap to remind themselves of the key points to remember about staying safe online. We will discuss the vocabulary 'share' and 'post' and what these mean. What things can we share on the internet? What things can we post on the internet? Children will discuss a digital footprint and watch a video. We will then talk about how we use the internet.	***To discuss ways to balance time spent online and offline.*** **Retrieval: Gimme five. Children to share 5 things they remember about posting/sharing online.** The class will share their favourite things to do at home or at school and group them into 'online activities' and 'offline activities.' The children will then take part in a carousel of online and offline activities and discuss which activities they enjoyed. We will then look at the balance scales and draw activities they do at home on each side – emphasising the need for a balance between online and offline activities.
Organisation & Communication	Sequence the story of Zork	Class discussion	Roleplay of real-world interactions	Class discussion on digital footprints	Carousel of online and offline activities
Reading & Maths Opportunities	Activity links with sequencing				

Term 1 computing Big Question- Programming 1: Algorithms unplugged			
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	• Recognising that some devices are input devices and others are output devices. • Learning that decomposition means breaking a problem down into smaller parts. • Using decomposition to solve unplugged challenges. • Developing the skills associated with sequencing in unplugged activities. • Following a basic set of instructions. • **Assembling instructions into a simple algorithm.** • **Learning to debug instructions when things go wrong.** • Learning to debug an algorithm in an unplugged scenario.	• **An algorithm is when instructions are put in an exact order.** • Decomposition means breaking a problem into manageable chunks, which is important in computing. • **Errors in an algorithm are called bugs and fixing these is called debugging.**	algorithm code bug debug decompose device directions instructions Input output manageable chunks order organise program problem solution specific virtual assistant

Term 2	Week 1	Week 2	Week 3	Week 4	Week 5
Lesson Overview including Substantive knowledge	***To understand what an algorithm is.*** **EYFS Retrieval** To understand the importance of sequencing instructions we will dress up someone in the class, thinking carefully about which items of clothing we give them and in what order. Children will then use this knowledge to help them create a 'dressing up algorithm' for their partner to test. Pupils will think about how we cross the road safely. What do we do and what order do we do it in? The children will provide the teacher with an algorithm to test.	***To follow instructions precisely to carry out an action.*** **Retrieval: Spot the mistake- What is wrong with the dressing up algorithm?** We will watch the BBC clip https://www.bbc.co.uk/bitesize/topics/z3tbwmn/articles/z3whpv4 To find out what an algorithm is. We will then follow an algorithm by drawing only the instructions we are given. Do all of our drawings look the same? Why/why not? This will lead to think carefully about being precise in our instructions. The children will then create their own creature by using a dice to create an algorithm. As a class we will discuss improvements that can be made to make our algorithms better.	***To understand that computers and devices around us use inputs and outputs.*** **Retrieval: Explain the answer – *instructions need to be clear and in the right order when writing an algorithm. Why?*** We will watch the BBC clip https://www.bbc.co.uk/bitesize/topics/zs7s4wx/articles/zx8hpv4 To find out what input and output is. We will then sort photographs into those that are input devices and those that are output devices. We will talk about virtual assistants that they may have come across such as *Siri* or *Alexa.* As a class we will talk about any problems they have come across when using them. The children will then become virtual assistants and only follow instructions given by their partner or teacher.	***To understand and be able to explain what decomposition is.*** **Retrieval: Which is the odd one out and why? Linked with input and output** We will watch the BBC clip https://www.bbc.co.uk/bitesize/topics/zkcqn39/articles/z8ngr82# to learn what decomposition means. We will apply what we have learnt to solve problems. We will then think about how images are created and which steps go into making them. The children will create a comic strip to explain to their friends how their chosen image was created. We will think about how computer games are made, step by step by watching https://video.link/w/d39Kb	***To know how to debug an algorithm.*** **Retrieval: Break it down. Tell your partner the small steps (decomposition) of brushing your teeth).** We will watch the BBC clip https://www.bbc.co.uk/bitesize/articles/ztkx6sg#zxt9dp3 to learn what happens when there is a bug in an algorithm. Looking at cartoons, the children will decide what has gone wrong in the algorithm. What can we do to fix it? The children will use this knowledge to help them spot bugs as they move around a map. They will correct the mistake (bugs) as they go.
Organisation & Communication	Dressing up algorithm	Creature algorithms	Becoming a virtual assistant	Comic strip instructions	Debugging a map
Reading & Maths Opportunities					

Term 2 computing Big Question- Programming 2 – Bee-Bot			
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	• Learning how to explore and tinker with hardware to find out how it works. • Learning how to operate a camera to take photos and videos. • Using decomposition to solve unplugged challenges. • Using logical reasoning to predict the behaviour of simple programs. • Developing the skills associated with sequencing in unplugged activities. • **Following a basic set of instructions.** • **Assembling instructions into a simple algorithm.** • **Programming a floor robot to follow a planned route.** • **Learning to debug instructions when things go wrong.** • **Using programming language to explain how a floor robot works.** • Learning to debug an algorithm in an unplugged scenario. • Taking and editing photographs	• The basic functions of a Bee-Bot. • You can use a camera/tablet to make simple videos. • **Algorithms move a Bee-Bot accurately to a chosen destination.**	algorithm code Bee-Bot debug demonstration explain explore inputting instructions precise predict program review test tinker

Term 2	Week 1	Week 2	Week 3	Week 4	Week 5
Lesson Overview including Substantive knowledge	***To explore a new device.*** **EYFS Retrieval** What is a Beebot? What can it do? **Retrieval: What is an algorithm, a bug and debugging?** The children will make the cut out of a Beebot move across a grid, as a class. Having learnt what kind of instructions work best, they will work in pairs to complete Beebot challenges.	***To create a demonstration video.*** **Retrieval: Gimme 5. Tell me 5 things that you remember about Beebots from last lesson.** We will watch the clip: https://video.link/w/XxiKb (an introduction video about Beebots). The children will share their likes and dislikes about the video. The children will complete one of the Beebot challenges they completed in the previous lesson. Thinking about what they did and how they did it. Children will then create a demonstration video explaining how a Beebot works and who to complete one the challenges.	***To plan and follow a precise set of instructions.*** **Retrieval: Fact tennis. Spend 1 minute taking it in turns presenting facts to your partner about Beebots.** The children will control a person as a Beebot. In groups of 3 (one judge, one controller and one beebot) children will work together to give their Beebot instructions. The children will take turns at the different roles and reflect on the positives and things to improve.	***To program a device.*** **Retrieval: Agree or disagree? The most important button on a Beebot is the X (clear button).** We will look at an example of a Beebot world mat. After exchanging ideas, the children will create their own. The children will be introduced to the word program. They will then create a simple program for their Beebot to reach a destination on their Beebot world mat. Some children will be asked to share their programs with the class, looking carefully at each step.	***To create a program that tells a story.*** **Retrieval: Program a Beebot. How will my Beebot get from A to B?** Using the online Beebots, children will be challenged with getting their Beebot to a given destination, thinking carefully about their program. The children will be read a story called 'The adventures of Beebot.' When they hear a destination in the story, they will need to program their Beebot to reach that destination.
Organisation & Communication	Programming a virtual Beebot	Beebot presentation video	Beebot role play	Writing a program for a Beebot	The adventures of Beebot
Reading & Maths Opportunities				Reading linked with word mat	Listening to story and identifying key words

Term 3 computing Big Question – Computing systems and networks			
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	• Learning how to explore and tinker with hardware to find out how it works. • Learning where keys are located on the keyboard. • Using a basic range of tools within graphic editing software. • **Developing control of the mouse through dragging, clicking and resizing images to create different effects.** • Developing an understanding of different software tools. • Recognising devices that are connected to the internet. • Logging in and out and saving work on their own account.	• **A computer and mouse can be used to click, drag, fill, select, add backgrounds, text, layers, shapes and clipart.** • **Passwords are important for security and to keep us safe.**	account log on/off clipart click drag and drop layers mouse password predict resize screen (monitor) software username

Pupil Offer	**Famous People**
	Wassily Kandinsky (artist)

Term 3	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Lesson Overview including Substantive knowledge	***To log in to a computer and access a website.*** The children will sort images into computer and not a computer. We will discuss some of the similarities and differences between these images. We will then think about passwords and what they are used for. Whay are they so important? The children will then explore Sketchpad. We will complete some challenges together as a class first and then the children will be given the chance to explore Sketchpad on their own.	***To develop mouse skills.*** **Retrieval:** **Brain dump – tell your partner everything that you can remember about drawing in sketchpad.** We will look at some digital artwork and pose the question – how was it created? The children will then create their own background art using sketchpad	***To use mouse skills to draw and edit shapes.*** **Retrieval: Gimme five. Tell your partner 5 things you can remember about creating your repeating pattern background on sketchpad.** The children will play shape detective with their partner to describe the shape they are thinking of. We will look at some artwork by Wassily Kandinsky and discuss which shapes we can see. The children will then create their own artwork inspired by Kandinsky on Skecthpad	***To draw a scene from a story using digital tools.*** **Retrieval: agree or disagree? It is easier to create art on the computer than use a paintbrush and paper.** We will watch the story of the three little pigs. The children will recreate a scene from the three little pigs using Sketchpad, thinking carefully about the background and shapes that will be needed.	***To create a self-portrait using digital techniques.*** **Retrieval: Speak like an expert. Spend one minute talking to your partner about using sketchpad.** In pairs, the children will face each other and look at their similarities and differences. The children will then create a self-portrait using sketchpad, thinking carefully about the shapes and colours they will need.
Organisation & Communication	Exploring Skecthpad	Creating a repeating pattern background	Artwork insprired by Wassily Kandinsky	Creating a scene from the three little pigs	Self-portrait
Reading & Maths Opportunities					

Term 4 computing Big Question – Creating media – digital imagery			
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	• Learning how to explore and tinker with hardware to find out how it works. • Learning where keys are located on the keyboard. • **Learning how to operate a camera to take photos and videos.** • Developing the skills associated with sequencing in unplugged activities. • Using a basic range of tools within graphic editing software. • **Taking and editing photographs.** • **Developing control of the mouse through dragging, clicking and resizing images to create different effects.** • Developing an understanding of different software tools. • **Searching and downloading images from the internet safely.** • **When using the internet to search for images, learning what to do if they come across something online that worries them or makes them feel uncomfortable.**	• Holding a camera or device still and considering angles and light are important to taking good pictures. • **Photographs can be edited, cropped and filtered.** • **How to search safely for images online.**	clear delete crop resize device digital camera download import drag and drop edit editing software Internet online filter keyword photograph image save as screen search engine sequence storage space visual effects

Term 4	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Lesson Overview including Substantive knowledge	***To understand and create a sequence of pictures.*** **EYFS Retrieval: What do we use to take a photograph?** We will look at a photo story together and discuss what is happening in each section. Why is it so important that the images are in the right order? If we changed the order would it change the story? The children will look at a sequence of pictures that are in the wrong order. What should the correct sequence be? The children will then create their own photo story. Thinking about the questions: We will then look at the box planning the children will be using to plan their photo story. Each child will then complete their own plan for a photo story.	***To take clear photos.*** **Retrieval: Gimme five. Tell me five things that you remember about photo stories from last lesson.** The children will be shown a selection of photos. They will have to decide whether they think the photo is good or bad and why. In groups of 3, the children will create their photo story, using their box maps to help them. Once completed, we will look at some of their work on the IWB	***To edit photos.*** **Retrieval: Brain dump. Tell your partner everything you can remember about taking photos.** The children will look at 2 photos of the same scene with different filters. What is the same and what is different? The children will then explore editing photos of their own using either sketchpad or Seesaw.	***To search for and import images.*** **Retrieval: Speak like an expert. Spend 1 minute telling your friends what you remember about editing photos.** The children will view a selection of photos that have been edited. What is different? Why do you think we edit photos? The children will be reminded what to do if they come across something that worries them before searching for images to edit using https://www.storyboardthat.com/photos The children will save their chosen image and edit it using Sketchpad	***To create a photo collage.*** **Retrieval: 3,2,1. Tell your partner 3 things you can do to edit a photo.** The children will be reminded of the photo stories they created earlier in the unit. After looking at a modelled version, the children will then create their own photo collage using either Seesaw or sketchpad.
Organisation & Communication	Box map	Photo story	Photo editing	Photo edit	Photo collage
Reading & Maths Opportunities	Sequencing				

Term 5 computing Big Question – Data handling – introduction to data			
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	• Learning how to explore and tinker with hardware to determine how it works. • Recognising that some devices are input devices and others are output devices. • Learning where keys are located on the keyboard. • **Developing control of the mouse through dragging, clicking and resizing images to create different effects.** • Developing an understanding of different software tools. • Recognising devices that are connected to the internet. • **Understanding that technology can be used to represent data in pictograms** • Using data representations to answer questions about data. • Using software to explore and create pictograms and branching databases.	• **Charts and pictograms can be created using a computer.** • A branching database is a way of classifying a group of objects. • Computers understand different types of input.	compare sort count data collection data record edit input information label pictogram record table tally

Term 5	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Lesson Overview including Substantive knowledge	***To show data in different ways.*** **EYFS Retrieval** Show pupils a pictogram and ask them what they can tell from it. Pupils will be exploring different practical ways that they can represent data presented to them. This will then progress into pupils learning how to record data in a tally	***To use technology to represent data.*** **Prior Unit Retrieval** **Mouse skills and resizing images** Pupils will be using sketchpad and clipart to create a pictogram which represents the data which pupils were exploring within the previous week.	***To collect and record data.*** **Retrieval: Brain dump. Recall everything you learnt last lesson about using a computer to represent data.** Pupils will be going on a mini-beast hunt to collect their own data which will be recorded as a tally.	***To sort data into a branching database.*** Pupils will work in groups and use prompts to create branching databases based on features of mini-beasts.	***To design an invention to gather data.*** **Retrieval: Explain your answer** Working in pairs, children to develop an invention that would collect data to help them answer a question.
Organisation & Communication	Seesaw Photographs	Sketchpad- Pictograms	Tally	Photographs of branching databases	Labelled diagrams
Reading & Maths Opportunities	Opportunities for counting				

Term 5 computing Big Question – Skills showcase rocket to the moon			
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	• Learning where keys are located on the keyboard. • **Learning how to operate a camera to take photos and videos.** • Using logical reasoning to predict the behaviour of simple programs. • Developing the skills associated with sequencing in unplugged activities. • Following a basic set of instructions. • Assembling instructions into a simple algorithm. • Learning to debug instructions when things go wrong. • Learning to debug an algorithm in an unplugged scenario. • Using a basic range of tools within graphic editing software. • Taking and editing photographs. • **Developing control of the mouse through dragging, clicking and resizing of images to create different effects.** • Developing understanding of different software tools. • Recognising devices that are connected to the internet. • **Saving work on their own account.**	• To know that when we create something on a computer it can be more easily saved and shared than a paper version. • To know some of the simple graphic design features of a piece of online software. • To know that a spreadsheet is an electronic 'table' for sorting data.	create designing document edit debug editing software editing program evaluate folder graphics input Instructions program photo robot save sequence order share

Term 6	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Lesson Overview including Substantive knowledge	***To recognise that digital content can be represented in many forms.*** **Retrieval: What is a keyboard used for? How do we move something on the IPad?** The children will be told that they will become rocket scientists in this units and create their own rockets. Using the Ipads, the children will create a list of equipment that they need to create their rocket.	***To design a rocket using a graphics editing programme.*** As a class, we will discuss the key features of the rocket. The children will then design their own rocket using either Sketchpad or Seesaw. They will label their design with the materials they will need to build it.	***To sequence a set of instructions.*** **Retrieval: how do we make a Beebot move? What happens if the instructions are not accurate? What is an algorithm?** The children will correctly sequence the images for making a rocket. We will discuss what would happen if…? One of the steps for making the rocket is missing. Can the children identify the missing step and add it in? We will talk about the importance of an algorithm being in the correct order. If we were to add new steps to our rocket building algorithm, where would they go	***To build a rocket.*** **Retrieval:** **What is a sequence? Why is this important in instructions?** What do you need to collect to make your rocket? What will you need to do first to build your rocket? The children will build their rocket, following the algorithm that they made. We will take photographs of the children with their finished rockets	***To test a design and record data.*** How will you know if your rocket design has been successful? How can you test this? The children will launch their rockets and measure the distance they have travelled. With support, the children will collect the distance data and interpret it together.
Organisation & Communication	List of equipment	Rocket design	Sequencing	Rocket building	Rocket launch
Reading & Maths Opportunities			Sequencing		