	Learning Objectives	Online Safety	National Curriculum Objectives
	Computing systems and networks – technology around us: Identify different forms of technology and explain how they help us. Identify a computer and its main parts (mouse, keyboard and screen). Use a mouse to navigate around a computer and create simple pictures. Use a keyboard to type, edit and navigate through written text (backspace, space bar and arrows). Explore school rules about how to use a computer safely and responsibly.	Explain rules to keep themselves safe when using technology both in and out of the home. Recognise that there may be people online who could make someone feel sad, embarrassed or upset and can give examples or when and how to speak to an adult they can trust and how they can help. Give simple examples of how to find information using digital technologies	**KS1 objectives:** 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 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; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies
	Creating media – digital painting: Identify freehand tools in the Paint program to create a picture using lines and marks. Identify the line and shape tools in the Paint program and use to create a picture. Select appropriate tools in Paint program to create a picture for a purpose. Explain selection of specific tools in Paint program when recreating a picture. Use the paint program to create an image independently, selecting appropriate colours, brush sizes and brush tools. Recognise and discuss differences between painting on a computer and painting on paper. **Creating media – digital writing** Identify a keyboard and use the computer to write. Add and remove text and numbers using appropriate keys. Use toolbar to change appearance of text (bold, italic, underline and capital letters). Use appropriate symbols to make style and size changes to text. Explain the purpose of specific tools and make informed choices about which to use. Compare and contrast writing on a computer and writing on paper.	Explain that passwords are used to protect information, accounts and devices. Recognise more detailed examples of information that is personal to someone. Explain why it is important to always ask a trusted adult before sharing any personal information online, belonging to myself or others. Recognise that information can stay online and could be copied. Describe what information I should not put online without asking a trusted adult first.	
	Programming – moving a robot: Explain what a given command will do. Understand what a direction command will do by acting out. Program a Beebot to do sequence of movements using forwards and backwards. Combine the four direction commands to program a Beebot. Plan simple program and debug a simple program, considering more than one solution. **Programming - programming animations (Scratch):** Choose a command for a given purpose e.g. to move characters on a screen. Demonstrate that a series of commands (blocks) can be joined together for a purpose. Identify and explain the effect on a block when its value is changed. Identify a sprite and explain that each has its own instructions. Design and create a project using algorithms to program blocks.	Give examples of when I should ask permission to do something online and explain why this is important. Use the internet with adult support to communicate with people I know. Explain why it is important to be considerate and kind to people online and to respect their choices. Explain why things one person finds funny or sad online may not always be seen in the same ways by others.	
	Data and information: Identify and group objects using labels. Identify objects that can be counted and grouped. Describe an objects in size, shape and colour and identify objects with similar properties. Classify objects based on specific properties. Compare and record groups of objects with different properties. Independently create groups and classify objects, explaining why.	Explain why work created using technology belongs to them. Save work under a suitable title / name so that others know it belongs to them. Understand that work created by others does not belong to them even if they save a copy.	

Brindishe
Federation

	Learning Objectives	Online Safety	National Curriculum Objectives
	Computing systems and networks – technology around us: Recognise the uses and features of different types of computer. Identify ways IT is used outside of school e.g. home and in the world. Explain how technology improves the world e.g. cameras, traffic lights and printers. Explain how to use different IT safely e.g. game consoles and iPads, and understand their responsibilities when using them.	Explain simple guidance for using technology in different environments and settings and how the guidance can help anyone accessing online technologies. Can use simple words in search engines. Demonstrate how to navigate a simple webpage to get the information they need. Explain why some information they find online might not be real or true.	**KS1 objectives:** 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 be-haviour of simple programs Use technology purposefully to create, organise, store, manipulate and re-trieve digital content Recognise common uses of information technology beyond school 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 inter-net or other online technologies
	Creating media – digital photography: Understand which devices can be used to take photos in portrait and landscape. Explain what makes a good photograph and discuss how a photo could be improved when retaking e.g. lighting. Use tools to change/ adjust an image e.g. changing colour effect and adding filter. Understand that photos can be changed and identify those that have been. **Creating media – making music:** Explain how music makes me feel. Identify patterns in music and explain simple differences between music pieces. Use a computer to experiment with pitch and duration. Describe how music can be used in different ways. Use a computer to show that music is made from a series of notes. Create music for purpose and reopen work to edit.	Explain how other people may look and act differently online and offline. Give examples of issues online that might make someone feel sad, wor-ried, uncomfortable or frightened and can give examples of how they might get help. Recognise that content on the internet may belong to other people. Can describe why other people's work belongs to them. Explain how information put online about someone can last for a long time. Describe how anyone's online information can be seen by others and know who to talk to if this incorrect or without consent.	
	Programming – robot algorithms: Describe a series of instructions as a sequence. Explain what happens when the order of instructions is changed. Predict the outcome of a program (series of commands). Design an algorithm for a floor robot independently. Create and debug a program I have written. **Programming – Scratch:** Understand that as in real life, a sequence of commands has a start. Explain that a sequence of commands has a start and an outcome. Create a program using a given design. Change a design by altering background and character to create a program. Design, create and evaluate a program using own design.	Give examples of how someone might use technology to communicate with others they don't also know offline and explain why this might be risky. Explain who they should ask before sharing things about themselves or others online. Describe different ways to ask for, give or deny permission online. Explain why they have the right to say 'no'. Identify who can help if they are not sure or if something happens online without their consent. Explain ow it might make others feel if permission is not granted to share something online. Explain why they should always ask a trusted adult before clicking 'yes', 'agree' or 'accept' online.	
	Data and information - pictograms: Record classification of objects into groups using a tally chart. Objects can be represented as pictures. Create a pictogram using a tally chart and explain what it shows. Select objects by attribute and make comparisons. Recognise that people can be described and compared using attributes. Explain that information can be presented on a computer. Understand responsibility and risks of presenting information on a computer.	- Explain and give examples of what is meant by 'private' and 'keeping things private'. - Describe and explain some rules for keeping personal information private. - Explain how some people may have devices in their homes connected to the internet and give examples.	

Learning objectives	Online safety	NC objectives
Computing systems and networks – Connecting computers Explain that input and output are fundamental to all digital devices and they follow a process. Know how to classify input and output devices and model a simple process. Understand how digital devices can change the way we work and that they are used for different activities. To be able to compare similarities and differences between digital devices and non-digital tools. Explain how a computer network can be used to share information (e.g. WIFI, wires, tablets etc.) Explore how devices are connected (server, switch and wireless access point WAP).	Explain what is meant by the term 'identity' Explain how people represent themselves in different ways online and explain ways in which someone might change their identity depending on what they are doing online. Describe simple strategies for creating and keeping passwords private	**KS2 objectives:** Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; 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
Creating media - *Stop-frame animation*: Understand that an animation is a sequence of drawings/ photos. Using a sequence of pictures create a moving picture (e.g. flip book) Understand how animated movement works and make predictions. Create a storyboard and plan animation (characters, settings and events) Create stop-frame animation. Review and evaluate the quality of the frames to improve animation. Understand how to add other media and effects to animation (E.g. music and text) **Creating media - *Desktop publishing*:** Recognise how text and images convey information. Understand that texts and layout can be edited for the given purpose (e.g. font, size, colours) Introduce the terms 'placeholder', 'templates' and 'orientations' using Microsoft Publisher to create a template for a particular purpose (e.g. magazine / book cover) Explore Microsoft Publisher by adding content to the template (e.g. pasting images and text). Consider different layouts that can suit different purposes.	Explain why copying someone else's work from the internet without permission isn't fair and explain what problems this might cause. Use key phrases in search engines to gather accurate information. Explain how things are sold and bought on the internet. Understand the difference between fact and opinion and understand that not all opinions are true or fair. Understand that we can get help from a trusted adult if we see content that makes us feel uncomfortable.	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs 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 Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 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, including collecting, analysing, evaluating and presenting data and information
Data and information: Branching databases Create multiple questions based on the same topic with yes/ no answers. Learn how to group of objects within an existing group and arrange objects in a tree structure. Learn how to use an online database tool to arrange objects into a branching database, and will create their own questions with yes or no answers. Use attributes to create questions with yes or no answers and apply these to given objects. Explain why questions need to be in a specific order and will compare the efficiency of different branching databases. Compare information shown in a pictogram and a branching database.	Explain how to search for information about others online. Give examples of what anyone may or may not be willing to share about themselves online and the need to be careful before sharing anything personal. Explain who they can ask before putting something online.	Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact
Programming: *Sequencing sounds* Identify the objects in Scratch (e.g. sprites, backdrops) and recognise that commands (codes) have an outcome. Explore different ways to start a program and create a sequence of connected commands. Recognise that a sequence of commands can have an order. Learn how to use costumes to change the appearance of a sprite, and backdrops to change the appearance of the stage. Build a sequence of commands combing motion and sound in one sequence. Create a musical instrument in Scratch. **Programming: *Events and actions in programs*** Investigate how sprites move using 'Events' and program sprite to move in 4 directions. Use extension 'Pen' to draw lines building on previous learning. Explore the process of debugging (identifying and fixing errors in a program). Design and create a maze-based challenge.	Describe ways people who have similar likes and interests can get together online. Describe the difference between 'knowing someone' online and offline, why it is different and how they can be careful about trusting someone online. Explain why someone might change their mind about trusting anyone if they feel nervous. Explain how someone's feelings can be hurt by what is said or written online. Explain the importance of giving and gaining permission when sharing online and offline. Give reasons why someone should only share information with people they choose to and can trust. Describe how connected devices can collect and share anyone's information with others.	

Brindishe Federation

Learning objectives	Online Safety	NC objectives
Computing systems and networks – The Internet Describe how networks physically connect to other networks and recognise how networked devices make up the internet (WWW) Explore what can be shared on the World Wide Web and where websites are stored. Analyse the contents of websites, before designing own website (offline). Consider the content to include and then use an existing website to create some content online. Recognise that not everything they see on the internet is reliable and accurate. Review images and evaluate the consequences of unreliable content.	Describe strategies for safe and fun experiences in a range of online social environments, Give examples of how to be respectful to others online and how to recognise healthy and unhealthy online behaviours. Explain how content shared online may feel important to one person but important to others' thoughts, feelings and beliefs.	**KS2 objectives:** Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; 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 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 Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 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, including collecting, analysing, evaluating and presenting data and information Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact
Creating media- *Audio editing* Understand that sound can be digitally recorded. Use a digital device to record sounds. Plan and record a podcast. Explain the importance of saving work and store digital recording as a file. Explain that audio can be changed through editing (changing volume/ making the recording fade in or out) Explore and add content for podcast. Understand that different types of audio can be combined and played together. **Creating media- *Photo editing*** Explore changing the composition of images using the 'crop' tool and evaluate the effect that this can have on an image. Identify changes made to an edited digital image by using an image editor to make a new image composition. Analyse the effect that different colours and filters can have on an image. Consider why people may choose to retouch images, and the positive and negative effects that retouching can have on images. Understand that not all images are real. Create some fake images and reflect on how easy it is to digitally alter images, and what this might mean for the images that they see around them.	Explain why it's important to consider who owns the content and whether permission is needed to use it. Can give simple examples of content that must not be used without permission from the owner. Explain how your online identity can be different to your offline identity and that people can pretend to be someone else online. Describe positive ways to interact with others online and how this can positively impact on how others perceive them.	
Data and information – Data logging Understand that data can be gathered over time to answer questions. Explore using a digital device to collect data automatically using input devices called 'sensors'. 'Sensors' can be connected to data loggers, which can collect data while not attached to a computer. Explore how data loggers work and explain that they collect 'data points' from sensors over time. Use imported data collected over a long period to find information (e.g. five-hour log of hot water cooling to room temperature). Draw conclusions from the data and explain the benefits of using a data logger.	Describe how to find out information about others by searching online. Explain ways that some of the information about anyone online could have been created, copied or shared by others. Explain that internet use is never fully private and is monitored. Know what the digital age of consent is.	
Programming – Repetition in shapes Create algorithms for a specific purpose using commands (e.g. their initials). Debug code by finding and fixing any errors. Understand the 'repeat - loop' code. Recognise where numbers, shapes, and symbols are repeated, and how many times repeats occur and create algorithm for drawing a shape (e.g. square). Decompose a task into smaller groups by identify 'chunks' of actions in the real world. Design and create a program that uses count-controlled loops to produce a given outcome. Test and debug the code written and evaluate the final program against the original idea. **Programming – Repetition in games** Look at real-life examples of repetition and identify which parts of instructions are repeated. Analyse different types of loops: infinite loops and count-controlled loops. Practise them on Scratch and think about which might be more suitable for different purposes. Develop and create a design for an animation of the letters in their name that use repetition to change the appearance of the sprite. Predict the outcome and evaluate the effectiveness of the repeated sequence. Look at a model project which uses repetition then design a game based on it using algorithms for the sprites. Create the game using the previous lesson's designs. Experiment with algorithms and modify the program to achieve desired outcomes and debug the program.	Explain how their online identity can be different to their offline identity. Describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them. Explain that others online can pretend to be someone else, including their friends, and can suggest reasons why they might do this. Can analyse information to make a judgement about probable accuracy. Describe how to search for information within a wide group of technologies. Describe some of the methods used to encourage people to buy things online. Recognise why lots of people sharing the same opinions or beliefs does not make them true and what makes fake news.	

Learning Objectives	Online Safety	National Curriculum Objectives
Computing Systems and Networks Explain that computers can be connected together to form systems using inputs, processes and outputs. Systems are built using a number of parts and they communicate with other devices, Understand that data is transferred over networks in packets and that networked digital devices have unique addresses. Recognise that data is transferred using agreed methods. Recognise the use of the internet for sharing and storing media in different ways. Compare working online and offline and recognise the internet allows people to work collaboratively. Working online can be public or private.	Assess and justify when it acceptable to use the work of others Know how this content can be found online. Explain what a strong password is and demonstrate how to create one. Explain how many free apps or services may read and share private information with others. Explain what app permissions are and give some examples.	**KS2 objectives:** Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; 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 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
Creating Media **Vector Drawing** Identify digital drawing tools and discuss how vector drawings differ from paper by using shapes Elements added to a vector drawing are called objects that can be moved, reshaped, and duplicated. These can be modified to create different effects Layers are used and these can be reordered and changed. Identify the elements in each layer Suggest improvements including the use of zoom to add detail and consistency. **Video Editing** Recognise that video includes visual and audio Videos can be planned using storyboards and recorded on a range of devices Explain the impact of angle, lighting, reshooting and editing Store, retrieve and export final recording Explain the quality of their final outcome	Explain the benefits and limitations of using different types of search technologies Explain what is meant by 'being sceptical", and why this is important online. Evaluate digital content and explain how to make choices about what is trustworthy Explain key concepts including: information, reviews, fact, opinion, belief, validity, reliability and evidence. Identify ways the internet can draw us to information for different agendas. Give examples of technology-specific forms of communication Explain that there are some people online who may want to do harm recognise that this is not our fault. Describe some of the ways people may be involved in online communities Explain how someone can get help if they are having problems and identify when to tell a trusted adult and when to offer support. Search for information about an individual online and summarise the information found.	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 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, including collecting, analysing, evaluating and presenting data and information
Data and Information Create multiple questions around the same topic and organise the data produced by grouping and sorting both digitally and offline Navigate a flat-file database to compare different views of information Recognise the benefits of using a computer to create graphs, including to refine using particular filters and select appropriate chart to visually compare data	Describe ways that information about anyone online can be used by others to make judgments about an individual and why these may be incorrect. Explain how identity online can be copied, modified or altered and how people can represent themselves in different ways. Demonstrate how to make responsible choices about having an online identity, depending on context.	Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact
Programming **Selection in Physical Programming** Build a circuit connected to a microcontroller and connect this to more than one output, including to light an LED, and to respond to an input Explain the use of infinite and controlled loops Design sequences for output devices Write an algorithm to control lights, and a motor and use selection to direct the flow of a program and a real-world condition to start an action Debug projects **Selection in Quizzes** Identify and modify conditions within a program Recall how conditions are used in selection and create a program, using an infinite loop to check a condition Identity ways the program would be improved and what setup code the project needs.		

Brindishe Federation

Learning Objectives	Online Safety	N. C. Objectives
Computing Systems and Networks Complete a web search and refine it to find specific information and compare results from different search engines. Understand web crawlers in creating an index and relate a search term to a search engine's index Explain how information is organised and limited by search engines including how they make money Choose methods of communication to suit a purpose and recognise that people choose different ways to communicate both online and off Use this to understand when I should and should not share information and know that information on the internet may not be private	Explain how search engines work and how results are selected and ranked, and know how to use this to search effectively. Describe how some online information can be opinion and why someone might present opinion as 'fact'. Know the popularity of an opinion or the personalities of those promoting it does not necessarily make it true, fair or legal. Define the terms 'influence', 'manipulation' and 'persuasion' Understand the concept of persuasive design and how it can influence choices. Explain the ways in which anyone can develop a positive online reputation. Explain strategies anyone can use to protect their 'digital personality' and online reputation, including degrees of anonymity.	**KS2 objectives:** Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; 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
Creating Media **3D Modelling** Know why you may want to use a computer to 3D model and compare to 2D. Identify how graphical objects can be modified. Select, move, delete, resize and change a 3D shape. Identify and choose 3D shapes needed to create a model of a real-world object and create it in an appropriate size using place-holders to create holes Identify ways the model can be improved and modify it based on this **Web Page Creation** Explore websites and identify the types of media used and common features Know that websites are written in HTML Describe the term 'fair use' and find copyright-free images Add content to own webpage and evaluate what it looks like Describe how navigation paths are used Use hyperlinks to other people's work.		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 Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
Data and Information Answer and ask questions from existing data and explain the use of headings Recognise why data should be organised and use a spreadsheet to answer questions Build a data set in a spreadsheet application (Excel) and apply a number format Construct a formula in a spreadsheet and recognise how the input changes the output Produce tables and graphs	Demonstrate the use of search tools to find and access online content Demonstrate how to make references to and acknowledge sources used from the internet Explain how sharing something online may have an impact positively or negatively. Describe how to be kind and show respect for others online including respecting boundaries Describe how things shared privately online can have unintended consequences for others. Explain that taking or sharing inappropriate images of someone even if they say it is okay, may have an impact for the sharer and others Describe effective ways people can manage passwords and what to do if a password is shared, lost or stolen Describe how and why people should keep their software and apps up to date Know simple ways to increase privacy on apps Describe ways in which some online content targets people to gain money or information illegally and have strategies to find them Know that online services have terms and conditions that govern their use.	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, including collecting, analysing, evaluating and presenting data and information Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact
Programming **Variables in Games** Identify and define variables Explain that a variable can hold numbers or letters and has a name and a value Decide where in a program to change a variable and use an event to set it Create an algorithm and explain programming and design choices Test and debug the code written and explain how it can be extended **Sensing** Test program on an emulator and transfer it to a controllable device Identify examples of selection in real world Use a variable in a selection statement to select the flow of a program Explain the importance of sequencing and use operand (<>=) within selection statements Experiment with physical inputs and modify the program to achieve different outcomes and debug the program		