Year 3	Topic Title: KAPOW – Emailing (E-Safety)	Key Vocabulary
National Curriculum Objectives: • 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 content that accomplish given goals • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	Being able to send an email is a valuable skill and in this topic, children learn how to send emails with attachments and how to be a responsible digital citizen by thinking about the contents of what they send. The area of cyberbullying; both how to recognise it, and how to avoid being unkind online, is also introduced. Children's emails will be set up via GMAIL prior to this unit. • To understand what email is used for and to send an email. ▪ Ask the children what they think an email is and why do we use them? ▪ What does being a responsible citizen mean? It's easy to send an email, but it's important that children know how to use email responsibly and safely. ▪ Make sure you model clicking on 'Sign In' and explain that email addresses usually have a username followed by a domain. The domain is the location that the email address belongs to, so in this case the school. We use the @ sign to link the username to the domain. Ask children whether they know how to make an @ sign on the computer (it will be Shift + 2) ▪ Everyone has their own unique password. Ask children why they think it's important to keep their password a secret. Discuss problems that might occur if someone else knows your password. (E.g. someone pretending to be you, someone reading your private emails, someone changing your password and locking you out.) Point out that it's ok to tell their parents or guardians what their password is. • To edit email content and add an attachment. ▪ We want children to understand how to email with attachments and to consider the content of their emails. ▪ Children are going to add an attachment to their emails, Explain that it could be any file, but is often a document or a photo. Explain that that attachments can be added to an email by using the paperclip icon. • To understand the importance of being kind online and what this looks like. ▪ Explain that this sort of behaviour is common online and sometimes people don't realise that what they are saying might be read as unkind. Sometimes, we might read something as being mean, but that's not what the person who sent it intended, so it's important to speak to the sender in person before getting upset. ▪ We have to remember that when we talk to someone online, we should only say things that we would say in real life. It is easy to forget that someone we talk to on the screen represents a real person. • To understand that cyberbullying involves being unkind online. ▪ What should you do if someone is being unkind online? Discuss different ideas for who to speak to and what to do. ▪ Emphasise that words can hurt, even when they aren't intended to. ▪ Pupils may not realise that what they are doing could be hurting someone's feelings and must think about their behaviour online. • To understand that not all emails are genuine. ▪ Discuss why someone might want to send a fake email. ▪ People can be tricked by fake emails, so it's always important to know what to do if something doesn't seem right. Some fake emails can look real, it is always work checking with an adult to see what they think. ▪ Children will send an email which describes some of the best ways to avoid being tricked by fake emails.	Account Attachment BCC (Blind Carbon Copy) CC (Carbon Copy) Computer Cyberbully Cyberbullying Domain Email Email Account Emoji Information Log Off Log On Password Spam Username

	Previous Learning Experiences:	
	Year 2: E-Safety lessons: Pause and think online, How technology makes you feel Internet traffic light	
Possible Community Links/trips	**Future Learning Experiences:**	
	Future E-Safety lessons throughout the school from Years 4-6	

Year 3	Topic Title: Journey inside a computer	Key Vocabulary
National Curriculum 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. 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	• **<u>To recognise basic inputs and outputs.</u>** ▪ Handout some papers to each pupil, either three small pieces or a sheet of a four. Explained that the children have two minutes to do a quick, simple drawing of the object that you call out. You not looking for artistry, but for them to show you they know what you are talking about. Explain that the children can label anything they think is not clear. Set a 2-minute timer and ask them to draw the following: keyboard, mouse, screen. Ask the children to compare their drawings with those of other children on their table. Some children may have drawn an onscreen keyboard like that which would find on a tablet or have drawn a trackpad mouse as opposed to a desktop computer mouse. Show the children pictures or examples of a real keyboard, mouse and screen to make sure the children have correctly matched the words and images. ▪ Introduce the terms input and output. An input is a way of telling the computer what you want it to do. An output is a way of seeing whether the computer has done what you asked it to. Ask the children to look at their three pictures and decide which they think is an input in which they think is an output. Encourage pupils to discuss this with the partner so that they feel more confident in their comments and questions. ▪ Pupils could role play how the computer sends and receives messages from input devices to output devices. ▪ Explain to the children that all of this is happening inside of a computer. The computer doesn't know how to read or write, so the messages being sent through the wires match what is happening on the screen. ▪ Children will create a poster explaining the difference between inputs and outputs and what they've learned from the role play activity. The success criteria for the children's poster must have: a clear title, explain what an input output is, explain what messages are sent through the computer, choose appropriate pictures and colours and designs. Encourage the children to share what they know about inputs and outputs. • **<u>To decompose a laptop.</u>** ▪ Recap over the previous session can the children tell a partner the difference between an input and an output can they give an example of both. ▪ Remind the children that in the last session we were looking mostly at a desktop computer but today they are going to consider a laptop. What do they think is on the inside of a laptop? The children should suggest a keyboard and mouse under screen, but they may also suggest camera, microphone and speakers. This is a great start as these are all peripherals. You may wish to recap which of these are inputs and outputs. ▪ Explain that the children are going deeper into the laptop in. We are no longer just thinking about peripherals, but what actually makes the laptop work. Do they know anything else that is inside the computer? You may find you get suggestions of wires, batteries under fan, these are great ideas of these have started to decompose what they already know that makes the laptop work. ▪ The children will be making their own paper laptops. Once they have finished, ask the children what they think each of the parts in a laptop do. They may not have an idea at this moment in time, that's fine. ▪ Start by going through the extra list of components inside of a laptop: hard drive, RAM, CPU, ROM, GPU. ▪ As a finisher for this session get the children to match definition cards two parts of the laptops. • **<u>To understand the purpose of computer parts.</u>** ▪ Show the children an example of the laptops they made in the previous lesson and ask them to recap the names of the different parts. I have the keywords up on the whiteboard so that the children can identify these inside their laptops.	Tablet Computer Laptop Desktop Decompose Disassemble Batteries Camera Microphone Speaker Touchscreen Input Output CPU GPU RAM ROM Hard drive Storage Technology

presenting data and information.	▪ Explain that the children are going to find out what it's like to be too specific parts of the computer: CPU and GPU. The CPU deals with all of the data it receives from input and output devices. The GPU takes the instructions from the CPU. It then process is the instructions to form images on the screen. ▪ Explain that the children are going to be following instructions, just as the CPU does, and making pictures just as the GPU does. Children will need to discuss what an algorithm is. An algorithm is a clear set of instructions required to carry out the task. ▪ Recap by explaining what the CPU and the GPU are. • **<u>To understand the purpose of computer parts.</u>** ▪ Show the children their ROM and RAM parts of their people laptops. Explained that the children are going to become the memory of a computer. ▪ Explain that computers have to be really organised and remember where everything is and when it was put there. You could use a matching pairs game in this activity. ▪ Explain that sometimes instructions saved in memory have to be retrieved first. You could use a hidden QR scavenger hunt in this activity. • **<u>To decompose a tablet computer.</u>** ▪ Ask the children what activities they can do on a tablet. Explain that playing temple run or Minecraft are the same thing- they just count as playing games. ▪ Give children time to think of ideas of things they will use a tablet for. Discuss what a tablet must have inside it to do these things, for example, it can take photos so there must be a camera. Cover the basics: Batteries, camera, microphone, speaker, touchscreen. Get the children to identify which of these are inputs and outputs. A touchscreen is both an input and an output. ▪ Recap on the parts inside the children's paper laptops. Can they remember the parts inside? CPU, GPU, RAM, ROM, Hard drive. Ask the pupils which of these components they think are inside a tablet. Does a tablet need a CPU? (something that is bossy and tells the other parts what to do and follows programmed instructions) YES. ▪ A tablet has all of these; however, they look a little different. Tablets are so much smaller; they have the GPU attached to the CPU so they're just one chip. RAM and ROM memory are still in there and the resources refer to the hard drive as 'storage' – this is because it's a different type of memory storage to a hard drive, but the function or purpose is the same. ▪ Children can create their own tablet, drawing the components in this time to represent the different functions. ▪ Use 'Ifixit- taking apart a tablet' This will allow children to see how everything comes together and makes the devices they are familiar with.	
	Previous Learning Experiences:	
	Children will have used iPads/laptops/computers in previous year groups and will be familiar with how to sue these devices.	

Possible Community Links/trips	**Future Learning Experiences:**
IT technician could provide a talk/physical demonstration of the deconstructing of a laptop.	Future computing experiences and lessons throughout the school from Years 4-6.

Year 3	Topic Title: Programming: Scratch	Key Vocabulary
National Curriculum Objectives: Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. 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	• **Tinkering with Scratch - To explore a programming application** ▪ Explain to the children that they will be using a programming language called 'Scratch' and play them the video 'Scratch 2.0 Overview'. This shows the range of projects that they can create in Scratch and gives them some inspiration. In this lesson, they will be programming the first letter of their name creatively. **Key questions** ▪ What happens when you add block x? ▪ How did you make that happen? ▪ Can you change what happens when you use that block? ▪ Talk the children through getting on to the Scratch website and signing in with the username/s you have created for them. ▪ Note: The first time they log in it will ask them questions about their Date of Birth (DOB) and the country they are from – this is merely for statistical purposes and you should not worry about the children providing accurate information. ▪ Show the children what the 'Create' interface looks like in Scratch. Talk through the different areas. In particular, make sure that pupils understand that we use the word 'sprite' to represent any image that we want to move or interact with instead of a background that remains stationary. ▪ Explain that they will tinker with the first letter of their name. Where do they think, they will need to click to change the cat to a letter? The 'sprites' area. ▪ To create a letter, the children can: Choose a pre-drawn sprite from the library using the first icon in the 'choose a sprite' menu in the bottom right corner of the sprites area. Paint a new sprite using the second icon in the 'choose a sprite' menu. For reference, the other two icons in this menu allow you to upload a file or to have a randomly chosen 'surprise' sprite. ▪ Once they have got a sprite to represent the first letter of their name on the screen, they need to delete the cat sprite. ▪ Model taking the 'When [green flag] clicked' block from the 'Events' section and dragging it into the script area. Explain that this tells the computer when to run the program and is the start of their program. ▪ Now, the children can 'tinker' with the different blocks available, adding them under the green flag block and then pressing the flag to run their program. • **Using loops - To use repetition (a loop) in a program.** ▪ Use activity: Starter code to create a Scratch project you can display on the interactive whiteboard (IWB) and use to demonstrate to children what the three different scripts do. Print out screenshots of your Scratch window (or copies of Activity: Starter code) and give to the children. ▪ Ask pupils to 'read' the code and predict what they think will happen: ▪ How do you start the program, what will happen when you press x? etc., after sharing some predictions about the scripts, model what happens when you press the 'spacebar' to run your code. Can the children explain it? ▪ Introduce the vocabulary of 'loop' and explain that when we repeat something in programming we call it a loop, but there are different kinds. One type of loop repeats a 'set' number of times, in this case 10. ▪ What do they think will be different about the piece of code which runs when you press the 'down arrow'? (this 'repeat until' another action is completed – in this case, the 'key > left arrow < pressed'). ▪ When will this stop? This will keep going until you press the 'left arrow key'.	Animation Application Code Code block Debug Decompose Interface Loop Predict Program Remixing code Repetition code Review Sprite Tinker

	▪ What about the final script which begins when you press the 'up arrow'? When will this stop? It will keep going 'forever', or at least as long as the program is still running. There is no code included in the script to make the 'forever' action stop, the only way you can do this is by selecting the big red circle button in the top right hand corner of the stage. **Key questions** ▪ What is a loop? What does it do? (A loop is a part of a program that repeats a section of code.) ▪ What do you think will be different about the piece of code which runs when you press the 'down arrow'? When will this stop? ▪ What about the final script, which begins when you press the 'up arrow'? When will this stop? ▪ Look at a basic musical program you have created – this could be similar to the one shown in the activity 'Making music example.' ▪ In this example: The 'backdrop' is the outline of the 'instrument' The shapes, or 'buttons', inside the outline are all 'sprites' Each sprite has a program that says 'when clicked' make a sound Spacebar stops everything ▪ If you can't remember how to change the background or sprite, make sure you watch the video from Lesson 1, Tinkering with Scratch, which shows you how. ▪ The children can then design their own instruments. Their music could be created by using anything in the 'sounds' blocks, which are coloured pink in the 'blocks palette' menu. ▪ You may find that the 'play sound' block only gives you one sound option, e.g. 'meow', 'pop', but you can easily add more sounds to your sprite by selecting the 'sounds' tab and choosing from the library. ▪ Pupils could also use the 'play note' block to use real musical notes. This is found in 'choose a sound' > 'choose a sound' > 'Notes' ▪ Finally, pupils could add a drum beat to their instrument via the pathway: 'choose a sound' > 'choose a sound' > 'Search' > 'Drum'. What they create is up to them. It can be any combination of the three as long as they use repetition in their programming. If your laptops have microphones in them, the children could create their own sounds. ▪ Children design and create their instruments. If they are spending too long on their design, limit their time on this to ensure they have adequate time for the programming. **Key questions** ▪ Why are loops useful in music? ▪ Why would we want to use a loop? (We use loops to stop us wasting time writing the same thing lots of times.) ▪ Why did you use loop x instead of loop y? (For example: I use 'repeat until' when brushing my teeth because I wanted to brush them until they were clean. I use repeat 15 times for climbing stairs in my house because I know I have 15 stairs.) ▪ How does using a loop improve your programming? (You're less likely to make mistakes if you write less. You also save time.) **Making an animation - To program an animation** ▪ Ask them what they think an animation is? An animation is a type of filmmaking where you make characters move – link to popular movies such as 'Up', 'Inside Out', 'Minions', etc. ▪ Look at the 'Lost in space animation' which is a remix based on a 'Code Club's module named 'Lost in Space''. Don't show the code, but let the children watch through the animation – leave the animation playing and hand out the activity 'Coding blocks sheet'. ▪ Ask the children to discuss with their partner which of these blocks they think have been used and tick them on the resource. This is the start of a skill called 'decomposition', where you think about a program or problem and break it down into small parts. ▪ Ask the children to share why they think those blocks are included – Which character uses that coding block?	

	Key questions ▪ What is an animation? ▪ What blocks do you think are being used? ▪ Where do you think that's being used? ▪ Why have you chosen to use that block? ▪ What are you trying to add? How are you going to do that? ▪ Explain that they will 'remix' an animation, which means to create a copy of the program and change it to do what you want it to. This means not starting with a 'blank page' but taking someone else's idea and altering the code. The opportunity to 'remix' a project means the creator of the original idea has allowed permission for alterations to be made for code learning purposes, which is different to say copying and pasting an image from the internet. ▪ Ask the children if they think that copying someone else's work or pictures from the internet a good thing to do? Let them discuss in pairs and then to feedback to you. Explain that copying someone's work directly without crediting them, is like stealing as people who create content for online purposes have own the 'copyright' for their work. 'Copyright' is a legal way of protecting a creator's original piece of work. People can get into trouble with the law if they do not have permission to copy a creator's work. ▪ To remix a project, simply hit the 'see inside' button, which will allow you to see the code behind the project, and then choose the yellow 'remix' button. ▪ Brainstorm together: What changes could you make to the animation that's there? ▪ Here are some suggestions: Monkey says 'Ow!' when hit by the rock; the rock could 'bounce' off the monkey; the Earth could spin; the star could become a 'shooting' star; a flying saucer/UFO could appear. ▪ Challenge the children to choose three of the ideas you came up with and include them in their version of the animation. **Key question** ▪ Is copying someone else's work from the internet a good thing to do? ▪ What changes could you make to the animation that's there? • **Storytelling - To program a story** ▪ Play children the 'Storytelling Animation' project. As children watch, encourage them to talk about it – how has it been created? What sprites will there be? How many backdrops were there? ▪ The children need to open the 'Storytelling Animation' by accessing the link https://scratch.mit.edu/projects/207812937/ . If you set up email accounts for your students in the autumn term as part of the Kapow Computing email module, you could even email your class the link to the project or alternatively display the URL on the board. ▪ Once they all have the story so far (it is only the beginning of a story) open on their own computers, ask them to prepare to remix by clicking on the 'Remix' button (if you have logins to Scratch for the pupils) or on the 'See Inside' button (if you are using the guest option). ▪ Explain that they're going to play a game called 'Sabotage', which helps them learn to debug (fix) code independently. You need to swap two blocks within the script that are next to each other, so that they're the other way around. ▪ Model how to play by getting the class to close their eyes whilst you change two blocks in the program to be the other way around – think carefully about which blocks you swap over to make sure it's something that the children will spot; for example, switch to the castle backdrop.	

	▪ Ask children to uncover their eyes and run the program again. Can they notice what has changed? Now show them the code by clicking 'See Inside', can they tell which blocks have been swapped? ▪ In this lesson, we want the children to identify both what is wrong and how to correct it, so make sure you are clear with pupils about the process of systematically identifying mistakes and then understanding how to correct them instead of just guessing. ▪ Repeat the game, but this time the children change the code on their computers using their 'Remix' version. After doing so, they can swap seats with the person they are sitting next to and find the change on that computer. Repeat the game until the children are confident at looking at the code and spotting changes that cause problems within the code. **Key questions** ▪ How has this project been made? ▪ What sprites will there be? ▪ How many backdrops were there? ▪ What do you expect to find when you look at the code? ▪ What has changed in the program? ▪ Where does something not make sense? Where is that in the code? ▪ What does block x do in your program? ▪ What would you do if you wanted to add a new character? ▪ What is it doing? ▪ Where is the code that makes it do that? ▪ What happens if you change one of the blocks? ▪ Does it do the same thing every time? ▪ What haven't you tried yet? ▪ This particular story only has a beginning, where we meet the characters and have the setting. Their job is to complete the story in whatever way they want using Scratch, by creating a middle and end – doing this by adding conversation/speech to each of the sprites (the boy and girl). ▪ Creating speech/conversation will require children to add blocks to the scripts of both sprites – paying particular attention to the wait time between the two characters speaking. This will ensure the characters speak one after the other. ▪ Then, reiterate the need for the children to solve their own problems. Draw their attention to how the story is coded, focus on: When one character is talking, the other is 'waiting' the same number of seconds so that they can speak once the other character has finished. When the backdrop changes, the positions of the characters change. You will need to use a 'go to x: y' block to do this – discuss with your pupils what 'x' and 'y' refer to in maths and point out that each sprite shows you their current coordinate in the top right of the scripts area. If you move the sprite and then grab the 'go to x: y:' block, the correct coordinates will already be there for you. Where the different backdrops are and how to add more. How to add more characters and to use a 'hide' block to make sure they're not visible until the point we want them to appear. You could explain how to use the 'hide' block but allow the children to work out for themselves how to use 'show' to make the sprite appear when they want it to. ▪ The children can continue the story however they want to.	

	▪ When things are going wrong, encourage the children to approach these problems independently. Ask questions such as: what is it doing? Where is the code that makes it do that? What happens if you change one of those blocks? Does it do the same thing every time? What haven't you tried yet? **Key questions** ▪ Was the beginning of the story a good one? ▪ Does it have a beginning, middle and end? • **Programming a game - To program a game** ▪ Show the children the game 'Robot Bop' and give them a few minutes to play it. The game is a simple one where robots randomly appear and disappear, but if you click on them, they will play a sound and disappear more quickly. ▪ Introduce the term 'algorithm' to the children and explain that before we start coding, we're going to 'decompose' the project and write an algorithm. The term 'decomposing' means to break something down into small parts. Explain that an 'algorithm' is a set of instructions which explain how the program is going to work – the algorithms makes it a lot easier to create a program ourselves. ▪ Show the children a new Scratch project with the cat and the white background – explain that their algorithm should take the project from nothing into a game. By following their algorithm, they will be able to code their own version of the game. **Key questions** ▪ How does the game work? ▪ What happens when I do x? ▪ How long do the characters appear and disappear for? ▪ Which blocks make that happen? ▪ Ask them what happened in the game from the beginning of the lesson. Go through the following questions and encourage children to be really specific with their answers: ▪ What happened when you clicked the green flag? – The robots started disappearing – The robots started moving ▪ Where did the move to? Could you tell where they'd go next? – A random place – The robot reappeared ▪ How many times did they keep appearing and disappearing? – Forever ▪ What happened next in the game? What did you do to play it? – Click on the sprites ▪ What happened when they were clicked? – The robots made a sound – The robots disappeared ▪ Now, hand out the Coding blocks sheets for the children to work in partners and get the children to cut out each of the blocks. ▪ They will need to match each of the blocks to the algorithm that you have created together on the board. By creating paper versions of their script, the children will be reinforcing the relationship between the code and the algorithm which will get the children to think more carefully about what the blocks are doing so that they select blocks to create their script purposefully rather than at random.	

	▪ Their paper script should look something like the code in the project. When the children have their paper code, they can log in to Scratch and recreate it using code blocks within Scratch. The sprites and backdrops that the children use for this project don't matter, so you could tie it in with a current topic you're studying. ▪ For this project, we can create one character and then use Scratch's 'duplicate' feature to make more sprites with identical code. Simply right-click or hold down 'ctrl' and click on the small icon of your sprite and select 'duplicate' from the menu. **Key questions** ▪ What happened in the 'Robot Bop' game? ▪ What happened when you clicked the green flag? ▪ Where did the move to? Could you tell where they'd go next? ▪ How many times did they keep appearing and disappearing? ▪ What happened next in the game? What did you do to play it? ▪ What happened when they were clicked? ▪ Can you change the size of each of the sprites so some are harder to get? ▪ Can you change the 'wait' time to make the game easier/harder? ▪ Can you make the size of the sprites change randomly?	
	Previous Learning Experiences:	
	EYFS and Y1 – Programming Bee-Bots Y2 – Programming ScratchJr	
Possible Community Links/trips	**Future Learning Experiences:**	
	Future computing experiences and lessons throughout the school from Years 4-6.	

Year 3	Topic Title: Top trumps databases	Key Vocabulary
National Curriculum Objectives: 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. 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. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable	• **Records, fields and data - To understand the terminology around databases** ▪ Show pupils some Top trump cards and ask them to explain what they are. ▪ Hand out some activity: Top trump cards, making sure each pupil has one. Explain that each card has information on it about the particular character or object and it is known as a record. ▪ Ask the children how they could compare two cards (this will depend on the theme of your Top Trump cards e.g. speed, size, strength etc). ▪ Explain that the headings need to be the same for each card, otherwise you wouldn't be able to compare them. These different categories are called fields. Choose a field and ask pupils to compare the value in that field to their partner's. Explain to pupils that they are comparing the data. ▪ When you are playing Top Trumps, the highest number in a chosen field wins the round. Ask the children to see who would win if they chose the field 'strength' (or something that is relevant to your cards). Recap: – A record is an individual card, showing information or data about that object or character – A field is the category e.g. speed that the records have displayed on them – Data is the information or value in each field, which they can compare when playing Top Trumps ▪ These labels on a spreadsheet to begin to make children aware of the different formats that a database can take. **Key questions** ▪ What is a Top Trumps card? ▪ How can you compare two different values? ▪ Why are the fields the same across all of the Top Trump cards in the set? ▪ Play Top Trumps ▪ Explain the rules of Top Trumps: – The children are each given a stack of Top Trumps Cards, which they keep hidden from their partner. – One child goes first by choosing the field that they want to compare with their partner's card, for example, height, strength etc. – Both pupils state the value or data they have in that field e.g. 6 ft 2, 165 cm etc. – The pupil with the highest value wins both cards. ▪ Emphasise that they should think carefully when choosing the category that they want to compare to their partner's to give them the best chance of winning. Get both pupils to compare the values to practise comparing numbers. ▪ While they play, make sure you reinforce the vocabulary of field, record and data and encourage them to use this language throughout. ▪ Get children to create their own. Hand out copies of the Top trumps template and decide on a theme (for example, superheroes, aliens etc). You could link to another subject and get the children to create Top Trump cards for the Greek Gods, rainforest creatures, rivers or planets. Ask pupils what the different categories or fields should be and get them to explain why everyone in the class has the same fields. (If they were all different, they wouldn't be able to compare the values.) ▪ Once the children have decided on the different categories, get them to assign values to each category. It's a good idea to give a total number that all of the values should add up to on each card as this prevents pupils from giving all of the fields the highest possible value and provides an opportunity for problem solving as they will need to keep checking their total.	Categories Data Database Fields (data) Filter (data) Graphs and charts Information Record Sort Spreadsheet

behaviour; identify a range of ways to report concerns about content and contact	▪ Make sure that there is one field which contains a word instead of numbers, this might be the colour of their character, superhero, alien or creature, it could be the name of their home etc. • **Race against the computer - To compare paper and computerised databases** ▪ Ask children what they think a database is. Explain that it is a collection of data stored in a logical, structured and orderly manner – it doesn't have to be computerised. ▪ Explain that there are plenty of paper databases and ask pupils if they can think of any, e.g.: a phone book or a catalogue. ▪ Ask pupils if a stack of Top Trump cards is a database and see if they can tell you why or why not. They could mention the fact that it has records, field and data, however, this information should be sorted in an ordered way. ▪ Ask pupils to visualise what a computerised version of a Top Trumps database would look like, get them to discuss this with the other people on their table, then share ideas as a class. **Key questions** ▪ What is a database? ▪ What is a paper database? ▪ Can you think of any examples of paper databases? ▪ Is a stack of Top Trumps a database? Why or why not? ▪ What is a computerised database? ▪ Can you visualise what a computerised version of a Top Trumps database would look like? ▪ Show pupils the activity: Top trumps example spreadsheet PDF and activity: Top trumps example spreadsheet Excel briefly and ask whether they look similar or different to how they pictured them. Check that they can find relevant information by asking "What is Hubble's size score?" ▪ Ask pupils why it might be useful to have this stored on the computer. Don't worry about spending time on this answer now as you will discuss and develop this later in the lesson. ▪ Hand the cut-out Top Trump cards to a volunteer and tell them that you want them to find the fastest alien in the stack as quickly as they can. As they do this, click to sort the data by Speed and highlight the name of the fastest alien. You can make a show of waiting for the pupil to look through all the cards, comparing them to make sure they've definitely found the fastest one. ▪ Ask the class why they think you were quicker. Ask them to consider any other benefits of a computerised database. ▪ Hand out two different coloured post-its (one for pros and one for cons). Discuss as a class what the advantages and disadvantages of these different types of databases and invite children to write their ideas on the post-its and stick them on a wall or on the board under the headings of 'Computerised databases' and 'Paper databases'. ▪ Hand out the activity: Database pros and cons statements one between two and get the pupils to sort them out under the heading of 'Computerised' and 'Paper-based'. **Key questions** ▪ Do they look similar or different to how you pictured them? ▪ Why might it be useful to have this data on a computer? ▪ What are the advantages and disadvantages of a computerised database? ▪ Why do you think I was quicker at finding out the answer?	

	▪ **Sorting and filtering - To sort, filter and interpret data** ▪ Ask pupils which of their Top Trump cards is the largest/fastest etc. This question will depend on the theme of the cards they made in Lesson 1, but should encourage pupils to compare the data on their cards and work out how to put them in order so that they can find the largest value. Once they've done this, reiterate the point made in the previous lesson that sorting a paper database takes a lot longer than if the information was on a computer. ▪ Ask children for their suggestions about how they could store this information on a computer to allow them to sort it in a convenient way. ▪ Explain that they will be putting the information from their cards into a spreadsheet. ▪ Key questions ▪ How can you sort the data to quickly find the [i.e fastest alien]? ▪ How can we store this type of information on a computer to allow us to sort it out in a convenient way? ▪ Ask pupils to access their emails and click on the link to the spreadsheet you have sent them. The column headings should be the fields from the top trumps cards. Model how to click on a cell then type in information from a card. ▪ Give each pupil a row number (so they don't type over each other's work) to enter the information in from their top trumps card from Lesson 1. Ask them to work in pairs to make sure they enter the values from their cards accurately. ▪ Then, ask pupils the question from the beginning of the lesson again: ' which is the largest/ fastest etc.' Model on the board how to filter results by one column (one field) and ask pupils what information they can get from seeing the results in order (they can quickly identify the largest, the smallest, how many are above or below a certain size etc). Next, model how to filter by a particular value e.g. Show aliens with a speed score of 4. ▪ Pupils work in pairs and make a copy of the spreadsheet so that they can filter the results without it being affected by other children doing the same. Give them time to experiment with the data, seeing what they can find out by filtering by different values. ▪ Ask each pair to come up with questions that they have been able to answer by using the data, e.g. Which aliens have an intelligence score of 6? ▪ They then create a quiz (on paper or Google Docs) based on what can be found by using their database, such as: Which are the three largest aliens? Which Alien is the slowest? Check the Example: Alien data quiz to see what this can look like. ▪ Once they've done this, start a new Google Form (you don't need to explicitly teach them how to use this as they'll cover it in future topics). However, it's useful for them to recognise and be familiar with how Google Forms look and how easy they are to create. ▪ Get children to suggest questions to add to the form, making sure that you don't repeat questions or make them too similar. **Key questions** ▪ Why would it be useful to sort data in this way? ▪ Why might you need to filter results? ▪ What information can we retrieve from seeing the results in this order? ▪ Can you suggest questions to add to the form • **Representing data - To represent data in different ways**	

	▪ Show a range of different pie charts and bar graphs and ask pupils to tell you what they know from looking at the data. Remind them of how we used sorting and filtering to find the fastest, or largest alien and ask whether they would find it quicker to do this if they had a graph to represent the data. ▪ As a class, discuss why people create graphs or charts rather than just have the information within a spreadsheet. Explain that it's alright for small sets of data, but for a large database full of information, looking at a graph, chart or other visual representation, can help to interpret and understand what the data tells us. **Key questions** ▪ What are graphs and charts for? ▪ Why might we show visual representations of data? ▪ What can you see from looking at the data in these forms? ▪ Open up a copy of the Google Sheet from last lesson showing information about their top trump cards. Explain that instead of sorting the data, we're going to show it in a different way so it's quicker and easier to understand what it tells us. ▪ Model how to select the appropriate data. Then, click 'Insert and Chart' to create a bar graph. Point out the Chart Editor on the right and discuss what the different options would look like. Encourage pupils to discuss and predict what would happen if different options were selected, then make these changes and finally discuss whether it adapted the chart or graph in the way they expected. ▪ Ask whether they think the graph or chart is useful or not and more importantly why they think this. Explain that the aim of visual representations of data is to make the information quicker and easier to understand, so if you try and show too much information, it can make the chart more confusing. ▪ Pupils then explore making their own charts, using different parts of the data in their Google Sheets. After they have experimented with a few different types, ask them to find the best charts for representing parts of the data and to justify their decision. ▪ Make sure that they experiment with showing data for particular fields as well as trying to represent the information from the whole database. Stress that they need to include the title for these values, so that they show up on their charts, otherwise the data isn't any easier to understand. ▪ Ask why the different columns or sections might display in different colours – how does this help us to interpret it? ▪ Why are all of the blocks or bars the same width? What would happen if they weren't? What would this tell us about the data? The area of the bar represents its value. If some bars were thicker than others, it would represent they had a higher value than the other bars. ▪ Why do we have to be mindful of this when creating paper graphs and charts? **Key questions** ▪ Do you think the graph or chart is useful or not? Why do you think this? ▪ Why might the different columns or sections display in different colours? ▪ How does this help us to interpret it? ▪ Why are all of the blocks or bars the same width? ▪ What would happen if they weren't? ▪ What would this tell us about the data? ▪ Why do we have to be mindful of this when creating paper graphs and charts?	

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- **<u>Planning a holiday - To sort data for a purpose</u>**
  - Ask pupils to recap what a database is and why it's useful to have a computerised version that you can easily search through, order and filter to find the most relevant information for your needs.
  - Get them to think of online databases they know of and why they are useful. Ask them to think about real world databases and explore 'BBC Bitesize's What is a database?'.
  - Show them examples of online shops and catalogues (e.g. 'Argos'). Ask pupils to help you filter and sort items by specified criteria, explaining the possible purpose behind these e.g. buying a present for a friend or sibling. Get them to relate the filtering, searching and sorting to Lesson 3 and compare the presentation of it. (Why might a website want to display this in a different way to just a simple spreadsheet?

    <u>Key questions</u>
  - What is a database?
  - What are they used for?
  - Which online databases do you know about?
  - Why are online databases useful?
  - Why do they often look different to the spreadsheets we have been using?
  - Explain to pupils that they are going to plan a holiday, including flights and hotels, using their knowledge of searching, sorting and filtering databases.
  - Discuss as a class what criteria the holiday must fit e.g. hotel with a pool, in a certain city, what dates and times they want to go. Display these on the board for the rest of the lesson for the children to refer to.
  - Encourage pupils to look at separate flight and hotel sites as well as the combined deals so that they compare the two and decide which offer would work best.
  - Model how to access the following websites: 'Expedia', 'Booking', 'Skyscanner', 'Kayak', 'Google Flights', 'Last Minute'.
  - Ask them how to sort the results or filter by an important point in the agreed criteria. Encourage pupils to discuss how easy or difficult each site is to use and whether any of them miss important fields they would like to sort or filter by.
  - Once all pupils have chosen the hotel and route they would take, they can compare these to the other people in the class, including discussing any deals which combine flights and hotels and comparing it to the separate flight and hotel offers. Get them to consider the advantages and disadvantages of both of these methods and decide upon the best option for the class.

    <u>Key question</u>
  - What criteria must the holiday include?

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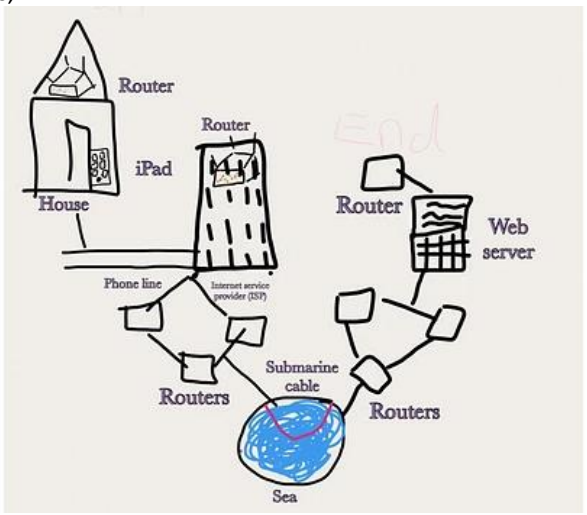
Year 3	Topic Title: Networks and The Internet	Key Vocabulary
National Curriculum Objectives: Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration Select, use and combine 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	This topic is often the most jargon-heavy for new learners as it is one of the areas we know least about as a society. This topic will include plenty of vocabulary-based activities and it is important that we constantly model the correct vocabulary and encourage pupils to use it when answering questions. • **<u>To understand what a network is and understand our school network.</u>** ▪ Before the lesson, ensure you know the location of all the parts of your school network, planning a route beforehand which passes each of these things: network switch, wireless access points, server, any other networked items, such as printers and photocopiers. You may wish to speak to your tech support team to ensure you know where the components are located and draw these onto a spare floor plan to help you locate some of the harder to find items, for example the network switch. ▪ At the start of the session show the image of two laptops connected with the line. Ask the children why it would be useful for laptops to be connected? Or to give more context, ask the question why would it be useful if my computer were connected to that of another teacher? Give the children time to talk about this with the partner and then share as a class. The children might offer answers such as to send messages to each other and this is possible, but it's unlikely you have a programme to do this on your laptop. Most messaging programme to use the Internet and it's important that the children recognised that the Internet and the network are not the same thing. ▪ Asked the same question but about different devices: printer in a photocopier. And network doesn't just connect computers together, but other devices too. Again, it's best to have photos of things that are within your school that their children may have seen. Ask them why is it useful to have these devices connected? What would you do if they weren't connected? ▪ If you are on a wireless connection points out to pupils that there are no ways connecting your laptop to the printer, yet you can still print. Ask the children to discuss and then mention wireless technology. Your computer is connected to Wi-Fi, as is the printer and so these things do not need wires. This does not require the Internet to work. If the Internet is turned off, you will still be connected to the network. ▪ Ask the children to explain what network is and what its for. Explained that as a class, the children are going to go on a network safari around the school. But the children into groups of two or three and handout the floor plans you have prepared, making sure the children understand where they are currently. Explained that they will mark the key parts of a network onto their floor plans . The children should say cameras or tablets with them to take photos of devices that they think are connected to the school network, such as laptops, tablets, desktops, printers, photocopiers, server common network switch come at wireless access points. Once back in the classroom, the children shared the photos they have taken with another group and discuss what they think is the purpose of each device on the network. ▪ Bring the class together and share a set of photos that you have taken. Start with the devices that the children will be most familiar with and discuss Eid each in turn. Ask: what is the device called? What is the device for? How does the device connect to the network? Is the device wireless or wired? ▪ Handout the sorting activity to each table and ask the children to discuss the images and definitions. Ask pupils to sort them into three separate groups: network, wireless and device. Get the children to find appropriate definitions and images to match each of these words, warning them that not all groups may have the same number of pictures or definitions. A network is one or more devices connected together. Wireless is a connexion that doesn't need wires. Device is technology; More than just computers, for example printers. Although the images and definitions were added with one of these terms in mind, but as long as children can you sound logic to justify why they put them in a specific group, they can sort them in this way. For instance, they might put a mobile phone in wireless because it doesn't need wires to connect.	device, digital subscriber line, file, Internet, network, network map, network switch, router, server, submarine cables, the cloud, Wi-Fi, wired, wireless, wireless access point.

Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	▪ Pupils are going to create a map of the schools network. You can split this learning objective over 2 sessions if need be. If the children have used the iPad's show them how to use pic collage to add the network device photos onto the page and how to add text to name them. When each of the components in the network has been named, get them to draw the lines connecting the devices in the way they think they are connected, using a key such as a dotted line for wireless and a solid line for wired connection. ▪ Remember that everything connects to the server via the network switch, although wireless items will connect to a wireless access point first then the wireless access point connects to the network switch. The server is the central hub of the network. ▪ Show the children the completed network map that you created before the lesson. Ask them to cheque their Connexions are in the correct places and change them if not. Also check the wired and wireless connections. • **<u>To understand how information moves around a network and begin to recognise real world networks.</u>** ▪ It might be useful to film this activity to show the children next week as a reminder of how the network role play worked. Ask for volunteers to be each part of the network, explaining that they can be a certain part of the network if they can tell you what it does. If you have been able to gather all network components, give them to the volunteer so that they hold the part that they are going to represent. Otherwise, hand each volunteer print out of the device they are representing. This is a good assessment for learning opportunity and a chance to remind the children what they learned in the previous lesson. Handout to the rest of the children their network Maps from last lesson. Once all the rolls have been handed out, get the children at the front to use the Ethernet cables or string to connect themselves together at the front of the room. Children who are not part of the network should be checking whether they agree. Ask them for a thumbs up or down if they think they are correctly connected before you then feedback to those who created the network. When everyone is positioned correctly like the network Maps in lesson 1, explained that this activity will teach them about the journey of a file. Tell the rest of the class that they will show the journey of the file using the counter and completed network map as it as is shown in front of them. ▪ Start by giving a plain piece of a four paper to the child who is the server, this represents the fail that has been saved onto the server. ▪ Now ask for another volunteer to role play how they would get the file from the laptop. What do they think happens? The child should wirelessly travel to the access point, then follow the wires to the network switch. ▪ When they get to the network switch, they should ask which wire leads to the server and then follow that wire to the server. When they get there, and sure they first send a request- asked the server: can I have the file that saved on you? ▪ Then, when the service says yes, the server should pass the file to the child to return. ▪ Repeat this process with a few different children and asking key questions to the rest of the class to make sure that they are engaged. If the children are confident, request that they get the headteacher's secret file from the server. When the child asked the server for it, the server should ask for a password, then they must go back to the laptop to request the password, before returning with the password allowing them to get the file or not. ▪ Show the children the scratched files journey animation which shows a file being retrieved. Ask the children to decompose what they will need to do to make their own version of the example project. Share their ideas to make a class algorithm. An algorithm is a set of instructions ▪ the algorithm should be something like this: set the backdrop as a network map, create images for the question mark and document icons. Place? Near the laptop and document icon near the server. Move the question mark to server via router and network switch. Speech? Request file. File moved to laptop via network switch and router. Get the children to work in pairs or small groups and use this as their algorithm to create the project with their own drawings and photos. ▪ Explain that so far we've talked about the school network, but actually networks are all around us. On each table, put a copy of the network situations activity and ask the children to write their answers to the following questions around the pictures: what computers	

	or devices are in this network? How does it work? How do people use it? What information could be being sent through the wires? This activity will have greater impact if the images are of places the children may have been, such as the local supermarket, restaurant, and seeing traffic lights. • **<u>To understand how the internet works and explain a website's journey.</u>** ▪ Ask the children to remind you about how the school network works, what devices are there, how are they connected together. Ask the children about the key components, for example wireless access points, the server and network switch, and to recognise most of these things are connected by wires. Then ask the children how they think the Internet works. ▪ Often children will suggest that the Internet is stuff transmitted wirelessly through the air, the use of the term the cloud does not help this analogy, or that it is via satellites. While she can use satellites for Internet access, it is a long way to space and back to the connexion is incredibly slow! ▪ After the children have theorised for a bit, show them the link Tele geographies submarine cable map which shows all the wires that are under the sea that allow different countries to connect to the Internet. Spend some time looking at this together and answering questions. Explained that this is just see cables, so landlocked countries do also have Internet through wires, but they are just not on this map. You can also talk about the fact that some countries come up those with more traffic, have more Connexions than others. As a fun fact, sharks have been known to bite the cables and break them, but this doesn't happen very often! ▪ Explain that the 1st way under the sea was laid in 1858, but the Internet wasn't invented until 1969. Ask them to think about why we had cables under the sea before the Internet and return to it later. In the 1800s come otherwise were used to send Morse code Telegraph across the Atlantic. The undersea cables were then replaced by telephone wires in the 1950s . This became the basis for our early Internet connections which used phone lines. ▪ Tell the children that you want to watch a video of a cat on YouTube and ask them what do you need to do. They may tell you to search for the website, load the app or just search cat video in Google. Now, ask them to imagine you just watch the best cat video- how did that video get to your computer screen? Hopefully, the children will explain it comes from wires under the ground and see. Now ask where they think their video is that you just watched. Where was it saved before you played it on your computer? Children may suggest a YouTube server which is correct; This is a special server cold, called a web server, that is just the computer designed to share the files such as websites, videos, images with other computers. ▪ Ask the children to act it out, one child sits at the front of the class they are representing the YouTube video. Another child sits at the back of the class, there and the YouTube web server. Finally come out a third child is the data that gets transferred from one to the other. ▪ Explain to the class that they are going to create a text map for retrieving a video on the YouTube website. They will then use this in the next lesson to retell the journey, without support, so they need to make sure that their text map is clear. Show the children the Prezi depicting the journey of a request to the YouTube server. At each stage, stop and ask the children to draw and label the next part of their map. You can create the text map on paper, but it's actually much easier on a computer or a tablet, where you can resize, rub out and move things around. If you're using the iPads use pic collage as the doodle function is really useful. ▪ Show the children the first part of the Prezi- the house and ask them to draw a picture of a house it's often easier to draw it big and then resize it afterwards using a select tool. Make sure they add the text label house. Then, other computer such as a laptop, tablet, phone, games console inside the house and label it. Then add a router. As you're working through, narrate what's happening: ▪ In any house with Internet access, there's a network, but often the network switch and the router in the same box. The router is then plugged into the wall which goes outside and under the ground (draw a road) Everyone in the street will be connected to the same wires under the ground, which is why the Internet can be slower when lots of people are using it at the same time. From the road,	

	your request for YouTube goes to the Internet service provider or ISP, for example Sky or BT or someone else (draw an office building) the request goes to the ISP to find out where the YouTube website is saved. Here it is looked up in a giant list and then sent on its way back underground. The request now bounces around from router to router asking the question are you the YouTube web server? And each time is pointed closer and closer to its target (draw three connected routers) now it reaches the sea, as most of the YouTube servers are in America, and uses the submarine cables to travel at the speed of light to America (draw a cable under the sea) once back on land, it bounces through more routers trying to find the right one (draw more routers connected)finally, it reaches the YouTube web server and asked to send a copy of the website back to the house (draw computer attached to a router) the website is just a file of code, images come up videos come up writing that will be copied and then sent back to you. Remember this is only half of the journey, the request has to go all the way back through the wires to get back to the computer in the house. Waste through the rest of it as if you were just retracing your steps. Then ask the children if they've ever complained that the Internet is slow or that their video is buffering. Now they know that it probably had to go halfway around the world and back again they may feel less impatient about it! ▪ Your map should look something like this;  ▪ Explain to the children that when the websites are sent through phone lines and into most houses, they use copper wires and a stent using electrical pulses. When websites are sent under the sea, they use fibre cables . Fibre cables send signals via lights as this is much faster, particularly if you've got a long distance to travel! Finally, wireless Connexions use radio waves which are only short range and tend to be unreliable- often dropping Connexions. ▪ Role play a race with the children: child one is wireless- balance a square of paper on the back of their head. Whenever it falls off, they must stop and pick it up and go back to the store. Child 2: copper wire- holds paper in their hands but can only walk. Child 3: fibre- holds paper in their hands but can run. ▪ Start the children in their race following the requirements and explain, that they are representing the different signals. Wireless has to keep stopping when the connection drops and return to the start. Wire is more stable but if its copper than its low and if its fibre in its first.	

	▪ Children might ask why we don't always use fibre. This is largely an infrastructure and cost issue. Fibre is much more expensive than copper and copper wires are already under the ground. To replace it, all the roads in the country would have to be dug up which would be very inconvenient and costly. It is actually happening in some places, but it will take a long time before it reaches everyone. • **<u>To explore the role of routers.</u>** ▪ The invention of the Internet. Asking some volunteers to come and be your school network as you have done before. Gather them on one side of the room and put up a UK sign near them to show that this is where our school network is. Then, ask for another group to be the school network in a school in America and get them to stand on the other side of the room with a USA sign. ▪ Explain that these two networks are really useful for teachers to be able to share their work with other people at their school, but wouldn't it be even better if these two schools could share lessons and ideas and work together? How could they do this if they are thousands of miles away? Use the invention of the Internet resource story. ▪ Now return to the school networks that you have had in the classroom . You want to connect them, but how? Use the telephone line! Now, pretend to plug whoever the router is into the wall as a phone line. Explain that this plug goes into the wall, out of the building and underground, connecting together anyone who has a home phone. Do the same to the network on the other side of the classroom. Now, using the phone lines, the two could share information. ▪ At this point, the children may have some questions about ethics for example what happens if they deleted someone's files on the other school in America? This is a really good conversation to have, as laws and rules evolve as technology doors and we have to learn what it is and isn't okay to do. Networks can now protect what comes in and out so that people can't damage your work accidentally or on purpose. ▪ Referring back to their text Maps from the previous lesson, ask the children to describe it the journey of a website to their partner. When they finished, share as a class and recreate the journey that they described on the borders this understanding sets of the lesson. ▪ Traceroute is a diagnostic tool used to track the pathway taken by a packet on an IP network from source to destination in the time taken for each jump that that packet makes. Show a visual traceroute website such as G suite tools or traceroute online comment then enter a website address in the box; Such as www.bbc.co.uk, and select traced. It may take a few seconds for it to reach the original server. Scroll down and you will see a map and a list showing all the routers that request passed through whilst looking for the website. ▪ The children are going to investigate what they can find out from this tool. Handout the website request tables and ask them to cheque the list of websites and know how many jumps they do and how long this takes in milliseconds. ▪ When the majority of the class is finished the task discuss what they have found to. ▪ In preparation for the next lesson, show the children the video of packets tale how does the Internet work? It can be particularly useful to focus on the analogy of the bus and the people getting off as children often don't make the connexion between this and the digital technology it's talking about. • T**<u>o understand the role of packets.</u>** ▪ To begin this session handout the images of website home pages per table and ask the children to point out the elements of the websites. For example, commas headings, subheadings, images, videos, text, links etc. ▪ Ask the children to think about storage on phones or tablets. They may have come across situations where their devices fallen can no longer save apps or photos or videos. Explain that when sending a website there is much less space for data to go through the wires of the Internet. In fact, one picture will be split into approximately 2500 pieces. Model this by splitting the printed home page into approximately 10 to 20 small pieces and surreptitiously keep and hide one piece. Give the pile of pieces to a child on one side of the room, this is the web server, on the opposite side of the room another child is going to request the website. The children stopped by	

	playing a game of Chinese whispers, can I have blank website? When the messages got to this child, they passed the packets or ripped up pieces of paper to anyone in reach one at a time. Each child that helps to pass the paper in the correct direction. If possible, have a rule that no one can get out of their seat, or passing has to occur to people you can touch until it reaches the destination. When it reaches the destination, this child then needs to put the website back together again like a jigsaw this will probably take a few minutes, particularly as they start to realise there's a piece missing. Can the children suggest how we could make putting the puzzle back together more efficiently? Hopefully, someone will suggest numbering the pieces. Even better, would be to suggest the number of the pieces out of the total for example one/ 10, so that the recipient will know how many pieces to expect sometimes packets do get lost or corrupted and the computer needs to know which ones to ask the server to resend. ▪ For the main activity in the class the children are going to become routers, with their arms representing the wires as they transmit messages around the Internet that is our classroom. Give each pair Anne continent label activity sheet to complete to remind them what the continents are, but also to show that we are creating the worldwide web in the classroom. Handout the packet sheets which have been cut up into individual packets, most children will want to write at least three. The packets are encoded with information so that they know where to go and what to do. Before the children start writing show them the packet information activity and talk through each part. ▪ Once you have completed this your packets are ready to be sent around your classroom as the worldwide web. ▪ Once you have completed this get the pupils to discuss impairs anything surprising or interesting, they have learned in this topic. Then come and discuss these as a class.	
	Previous Learning Experiences:	
Possible Community Links/trips	**Future Learning Experiences:**	
	Future computing experiences and lessons throughout the school from Years 4, 5 and 6.	

Year 3	Topic Title: Digital Literacy – Using iPads	Key Vocabulary
National Curriculum Objectives: 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 search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Solve problems by decomposing them into smaller parts. Use technology safely, respectfully and responsibly; recognise	• **<u>Planning a book trailer - To plan a book trailer</u>** ▪ Watch one of the following film trailers and ask the children what they think the purpose of the videos are (to entice people to read the book): Link: 'Dog Diaries film trailer' (from the main character's point of view) Link: 'The Lost Penguin film trailer' (no voice, synopsis of the story) Link: 'The Dark film trailer' on Video Link Link: 'It's a Book film trailer' on VideoLink ▪ Then, watch one or two more of the above and discuss what makes them different in terms of audience and purpose. ▪ Finally, use abstraction (ignore all unnecessary detail) to break down how the video has been created, for example separating what the sounds they hear from the images they can see on screen. **<u>Key questions</u>** ▪ What is the purpose of a book trailer? ▪ Whose point of view is the trailer from? ▪ Ask the children to work in pairs and choose a book they know the story of. They then need to create a book trailer for the book. ▪ They then need to decide on the style of the trailer, such as: Film or take photos of parts of the book. Film themselves 'Jackanory style'. ▪ Hand out the activity: Storyboard templates A and B to each pair and ask them to select key scenes and fill in their storyboard, making sure to not give away too much of the storyline – especially not the ending. Ask them why it is so important to sequence these in the correct order. ▪ Once the pairs have created their storyboards, ask pupils to write notes of anything extra they need to add as part of the editing process. This may include elements such as text, voiceover, sound effects and music. Refer them back to the example book trailers from the beginning of the lesson. **<u>Key questions</u>** ▪ How much of the story should you share in the trailer? ▪ What will make other children want to read that book? • **<u>Filming - To take photos or videos to tell a story</u>** ▪ Discuss the tips from 'Future Learn – Introduction to camera positioning' and discuss the effect of each one. ▪ Ask: How does it make the audience feel? What impression does it give about the characters, setting or story? ▪ Ask children to consider how they will portray the key characters or story elements in their trailer and how they might use different shots to help with this. For example, the children could show the whole page or take a picture of just part of it, zooming in on someone's expression. **<u>Key questions</u>** ▪ What's the effect of each technique? ▪ How does it make the audience feel?	Plan Trailer Key events Sound effects Video Film Photos Key Scenes Storyline Storyboard Text Voiceover Music Technology Filming Digital devices Edit Import Photo Film editing software Record Sound App Tablet Laptop Desktop Graphics Time code Transition Text Theme Cross dissolve Slide Wipe Fade to black Fade to white Evaluate

acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	▪ What impressions does it give about characters, setting or story? ▪ How do you think that person is feeling? ▪ What mood is created with this shot? ▪ What does it make you think? ▪ Make sure the children have their storyboards from 'Lesson 1'. ▪ The pairs can then start filming or taking photos for their book trailers, thinking about all the different shots that they will need to include and how they will accomplish this: How are they going to frame their shots? Have they filmed or taken photos for every part of their storyboard? ▪ Remind pupils that they can put the clips in the right order later, as long as they get all the scenes they need. ▪ Once the pairs have finished, get them to refer back to their storyboards, specifically, the extra notes they wrote for the voiceovers, text, sound effects or music. ▪ For the voiceover, get the pairs to work together to write a simple script. Remind them that it should make the viewer eager to read the book without giving away too many details. ▪ Since the voiceover, sound effects and text must match what is going on on the screen, explain that the pairs will need to think very carefully about how long sounds or voiceovers should go on for. There is no point in having a long voiceover that talks about something no longer being shown. This is why it is easier for pupils needing extra support to use photos rather than filming. If they really want to use video rather than photos, remind them to keep their voiceovers simple and short. **Key questions** ▪ How are you going to frame your shots? ▪ Have you filmed or taken photos for every part of your storyboard? **Editing the trailer - To edit a video** ▪ Re-watch the book trailer of 'The Dark video trailer' on VideoLink, showing how it has simple music, text and images yet it is very effective. ▪ Explain that part of the skill of editing is knowing what not to include to make the best video. ▪ Hand out their storyboards and explain that they are going to explore and experiment with the effects in 'iMovie'. ▪ Key questions ▪ How is this book trailer effective? ▪ What makes a successful book trailer? ▪ What different effects can you create using iMovie? ▪ Open the 'iMovie' app. Under the 'Projects' heading, click on the '+' symbol and choose the 'Trailer' option. ▪ Quickly explore the different 'Trailer' template options available and choose one that is appropriate for the book that has been chosen. ▪ Movie or Trailer ▪ Choose the 'Create' option located in the upper-right hand corner and then select the 'Storyboard' tab. ▪ Add pictures or videos to the 'Storyboard' section by clicking on one of the grey sample images and selecting relevant media (photos or video) to insert onto the trailer's timeline. ▪ Once the selected media and text has been added to the 'Storyboard', click on the 'Outline' tab to edit key information, such as movie name and credits.	Video editing

	Transitions and text - To add text and transitions to a video ▪ Recap 'Lesson 3' with the children, where they created movie trailers in iMovie. Remind them about the restrictions when creating a trailer with a preset template. Pupils will already have remarked that there is no opportunity to add music or soundtrack. ▪ Explain that in this lesson, they will use the 'Movie' option to create their trailers because it features more options. ▪ In the 'Trailer' option, you can add a pre-designed template with graphics, titles and music. ▪ In the 'Movie' option, you can either add clips to a pre-designed theme with graphics and titles or start with no theme and develop a movie from scratch using photos and/or video clips. ▪ Explain to the class that in the 'Movie' option, a video transition describes how separate shots or scenes lead into one another with an effect. This could be a straight cut or may involve effects such as fade-outs, wipes, dissolves and fades or other visual effects. ▪ Demonstrate the following transitions on iMovie: None, Theme, Cross dissolve, Slide, Wipe, Fade through black or white. **Key questions** ▪ What is a 'transition'? ▪ What do you understand by this word? ▪ What does this transition make you think of? ▪ Demonstrate how to add text to videos on iMovie. ▪ Explain that in some of the book trailers we saw in 'Lesson 1', there was no voiceover. Instead, everything was communicated through text. The purpose of the text, in this case, was to communicate the message of the story without giving away the ending. ▪ Give children the rest of the lesson to add text to their trailers and if they have time, add transitions as well. Make sure they are referring back to their storyboards from the first lesson of the topic but explain that they don't have to stick rigidly to this. ▪ Encourage them to experiment, predict and explore how the software works to develop their understanding of what they could create with it. • **Video reviews - To evaluate video editing** ▪ Watch the 'Journey book trailer' on VideoLink. Then, bring up the questions from the Activity: Evaluation sheet from 'Lesson 4': Does the video give enough information without giving it away? Does it include at least one transition, sound effect etc.? Does it seem as though the sequence of scenes is in the right order? Am I left wanting to read the book? Why/why not? ▪ Discuss the trailer you have just watched as a class and ask children to offer answers to the questions. Then, ask if there is anything else they think makes trailer good or anything they think would make it better. ▪ Add these points to the board to create a success criteria for their book trailers. **Key questions** ▪ Does the video give enough information without giving it away? ▪ Does it include at least one transition, sound effect etc.? ▪ Does it seem as though the sequence of scenes is in the right order? ▪ Am I left wanting to read the book?	

	▪ Why/why not? ▪ What makes a good video? ▪ What makes a successful book trailer? ▪ What did you enjoy about this book trailer? ▪ What do you think would make it better? ▪ Get pupils to download their finished videos on 'iMovie' and send these to you. ▪ Show the videos to the class. ▪ After each has been watched, discuss how well the video meets the class success criteria and make suggestions for how the trailers could be improved. Note any tips other people learnt to apply to their own projects. ▪ Focus the children on what they have learnt and how they can help others learn and improve. Explain to the children that they can only say that they don't like something if they are able to make suggestions as to how to improve it. ▪ To finish you could then: Create a slide presentation about the book and embed the video, add an image of the front cover (recap how to insert images), write a blurb (discuss what this is, where to find it and what the key features are), add an image and information about the author, ask children to discuss how they should order the slides e.g. alphabetical order, by genre, fiction/non-fiction, Publish the videos on a class blog and make comments on the different videos based on verbal feedback during the main activity.	
	Previous Learning Experiences:	
	Y1 – Digital Imagery Y2 – Stop Motion	
Possible Community Links/trips	**Future Learning Experiences:**	
	Future computing experiences and lessons throughout the school from Years 4-6.	