Computing Road Map

	Cycle A			Cycle B		
	AUTUMN	SPRING	SUMMER	AUTUMN	SPRING	SUMMER

Computing Road Map

Year 1/2	***Understand what algorithms are; how they are implemented as programs on digital devices: and those programs execute by following precise and unambiguous instructions*** ***Create and debug simple programs*** *- Explain that an algorithm is a clear set of instructions for how to do something.* *- Create instructions for making a sandwich (for our journey)- film oral instructions- check if they are precise.* *-Use Seesaw to give evidence of Sandwich made (photo)* *- picCollage to present pictures of stages.* *Explain that debugging means changes mistakes in a program so that it works.* *- Children to move bee bot around an obstacle course- trying to do it in the least number of steps.* -Smartie the penguin social story. How can we stay safe online and who can we talk to if we are concerned? Create a poster for what to do if children are worried online. Create on PicCollage	***Use technology purposefully to create, organise, store, manipulate and retrieve digital content*** Create a tally of different children's favourite foods. How can we record that electronically? Can we make it visual? Look at excel and use of graphs. Use J2E.com to create a pictogram on favourite food. The Human body (teacher App) – Digestion and cleaning teeth. ***Recognise common uses of information technology beyond school*** **Science link** How can we use technology to keep us healthy? - Look at heart rate monitors- and test these out. - How does the HR change when exposed to exercise. -Measure heart rate with Cardio App' -J2E.com to put into graphs	***Understand what algorithms are; how they are implemented as programs on digital devices; and those programs execute by following precise and unambiguous instructions*** ***Create and debug simple programs*** *- Recap what we mean by an algorithm- give children instructions to follow precisely.* *- Remind children of bee bots- entered code* http://www.scratchjr.org/teach/ activities Children to work through ScratchJr tasks ***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.*** - Remind children that we know how to be kind to people in the real world but how can we be kind online? https://www.childnet.com/ufiles/DigiDuck-eBook.pdf - Read the story and discuss. - Create a poster of how to be respectful online. -PicCollage	***Use technology purposefully to create, organise, store, manipulate and retrieve digital content*** *- Create a presentation on Seesaw on the fire of London.* *Children to insert pictures taken from an iPad and if possible, a film of a fire.* *-Internet (Google or Safari)* ***Recognise common uses of information technology beyond school*** *- Discuss what technology we have at home- sound, light, entertainment, cooking, cleaning etc.* *-Internet (Google or Safari)* *- Children to consider the technology that is around them at home and how it is useful* *https://www.twinkl.co.uk/resource/t-i-113-ks1-identify-* *Information-technology-in-the-home-activity.* *- How can technology be used to put out fires?* *-Internet (Google or Safari)*	***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*** - Ask children to draw their name through using an algorithm https://www.j2e.com/jit5#turtle Can they take their sprite on a journey? Can they record the steps for a partner to use? ***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.*** - Consider what we already know about staying safe online. - How can we keep information safe? - Use www.thinkuknow.co.uk	***Use technology purposefully to create, organise, store, manipulate and retrieve digital content*** *- Children to create a Seesaw document with scientific writing for the insects found around school. Children will need to create heading, text boxes and insert pictures.* ***Recognise common uses of information technology beyond school*** *- Ask Jeremy to set up the wildlife camera trap.* *- Ask children what animals we might see, how could a camera trap be useful?* *- Look at camera traps around the world* *https://instantwild.zsl.org/* *Or in zoos* *https://www.thedonkeysanctuary.org.uk/webcams* - *Present on Seesaw. What did he find?*

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Year 3/4	***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.*** Understanding importance of handling equipment carefully and safely. Research into Sir Tim Berners-Lee. What devices use the internet and what uses the world wide web? *-Internet (Google or Safari)* *-Keynote Presentation on TBL.* *Teaching element* *Introducing split screens to children on 2:1 device* Are we being safe online? What does this mean and why is it important? E-safety discussion each time the children use the computing equipment. - Mentioned before every lesson. - www.thinkuknow.co.uk Scratch Junior on the life of Queen Victoria. -Learning how to save. -Creating a sprite of yourself.	Labelling features of a volcano using Keynote. - Google earth - Google earth quiz - Apple maps - Screen shotting Teaching volcanoes – QuakeFeed App'. Live reports on volcanoes around the world. Good tool for research. This would also be a good tool for data collection. -Coding club Art Hokusai- Great Wave on Sketches App' or rushes Redux App'	***Collect and combine information and data*** ***Design and create content to accomplish a given goal*** • Children will study Google Earth and recall information from what they see. • Children will use their researching skills learnt in prior term to gather information throughout various lessons. https://www.ordnancesurvey.co.uk/ Data collection skills: • Study the rainfall in different areas within the UK. • Create a graph that shows the differing amounts in different regions of the UK? • Does this have a bearing on where people live? https://www.currentresults.com/Weather/Europe/Cities/precipitation-annual-average.php Use of Excel or Numbers to formulate data charts. Maths: Hopscotch – 2D shapes. Repeating pattern. J2E.com – to build upon statistics **(CS)**	***Understanding e-safety.*** Be Internet Sharp & Be Internet Alert (Be internet legends) – google See Be Internet Legends scheme of work for lesson plans. www.thinkuknow.co.uk Plenty of unplugged activities for these. • Incorrect instructions the children need to track back and solve. • Create a maze for a blindfolded child to solve. Children will have to debug their algorithm as they go through. • Depending on accessibility, we can use Scratch to help us with this. See beginners guide to debugging. ***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.*** Understanding the basics of iPad software. -Open and close apps -Search for App -Save work -Rename work -Exporting work to -Showbie/Seesaw	***Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts*** *-Unplugged, writing a set of instructions to get round a maze.* ***(CS)*** ***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.*** Algorithms and programming sessions in afternoon rotations. A.L.E.X Lightbot Hour Playgrounds – For more experienced, confident students. Suggested Apps' -Hour of Code -What's wrong with this code? ~Debugging activities.

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Year 5/6	***Combine a variety of software to accomplish given goals on a range of digital devices Analyse and evaluate information and data.*** Understanding the basics of iPad software. *-dependent upon iProdigy status* Create a timeline using software on iPads. Include voice overs and save on Showbie. -Keynote to present -Recording voice over presentation and exporting as a movie. -Padlet **(DL)**	***- Understand the importance of using technology safely, respectfully and responsibly*** This point should be discussed on all occasions children are using the technology to support their learning. Thinkuknow.com Internet safety week PSHE lessons – cyber bullying **(ES)** ***- Understand the basic workings of computer networks including the internet.*** Review understanding in difference between WWW and internet. Build a spider's web showing a visual of what the internet is – linking lots of devices together. **(IT)** ***- Understand the opportunities computer networks offer for collaboration.*** In which ways do our modern lives depend on computer networks? - Email - Mobile messaging - Social media - Most forms of communication. - Gaming -Making your own game - Hopscotch Explore all these. Could be entwined with a **PSHE** lesson. **(CS)**	***Combine a variety of software to accomplish given goals on a range of digital devices*** ***Analyse and evaluate information and data*** **Science link** Using the data collected in science lessons, create Excel or Numbers spreadsheets to collate the data. Explore the use of graphs and which are appropriate to present the collated data. Conclusions to be drawn from data in science. *-Numbers to record a science experiment.* *-Ensure use of pages to write up scientific reports.* ***(DL)*** ***Select and use software to design and create content that presents data and information.*** **Project** A large-scale retail park is going to be developed in Hemingford. Your job is to stop it from happening. Gather evidence and present your arguments. Teach skills of presentation using one of: Pages/ PPT including visual/ sound effects, Film, Podcast Knowledge is developed as part of Geography skills, application through the mediums of Computing and Digital Literacy. *WWF Free Rivers:* *River impact – flooding and farming …* ***(IT)***	***Be responsible, competent, confident, and creative users of information and communication technology. Evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.*** Understanding the basics of iPad software. *-dependent upon iProdigy status* **E-Safety** Make a poster or presentation on: (Could be a poster aimed at a different year group) •The meaning of cyber-bullying and its consequences and outcomes •The importance of privacy settings and keeping passwords safe •The pitfalls of sharing photographs and videos •The phrase 'think before you send' •The meaning and importance of emojis •The hidden costs of app usage and in-app purchasing -www.thinkuknow.com ***(ES & DL)*** *PSHE: Creating posters for 'feelings or boredom' – Pages. Learning how to vary the templates.* ***(DL)***	***Combine a variety of software to accomplish given goals on a range of digital devices Analyse and evaluate information and data.*** ***Design and create systems that accomplish given goals.*** Hopscotch – A travelling character across North and South America (CS) Design your own app – using Keynote as a platform. Atlas App. Countries, Counties, capital cities and flags. **(DL, CS & IT)** https://www.ilearn2.co.uk/appdesignfree-html/ Introduce the skill of screen record to demonstrate the App they have created. ***(IT)***	***Work with variables.*** ***Solve problems in writing programs by decomposing them into smaller parts*** ***Use selection and repetition in programs*** ***Simulate physical systems*** ***Explain how some simple algorithms work and detect and correct errors in them.*** *Coding* *Learn about drag and drop coding on Code.org.* *• Create your own game using (drag and drop programming).* *• Share the game with friends and complete peer review* *• Host a Gaming Convention for other classes* *Using Hopscotch to create game.* The playground app allows children to work through mazes that increase in complexity. *VARIABLES!* ***(CS)***

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- Computer science (CS)
  - *learning how to code and learning about debugging, decomposition, and digital data.*
- Information technology (IT)
  - *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.*
- Digital literacy (DL)
  - *The ability to locate, organize, understand, evaluate, and create information using digital technology."*
- E-safety (ES)
  - *Being safe on the internet.*